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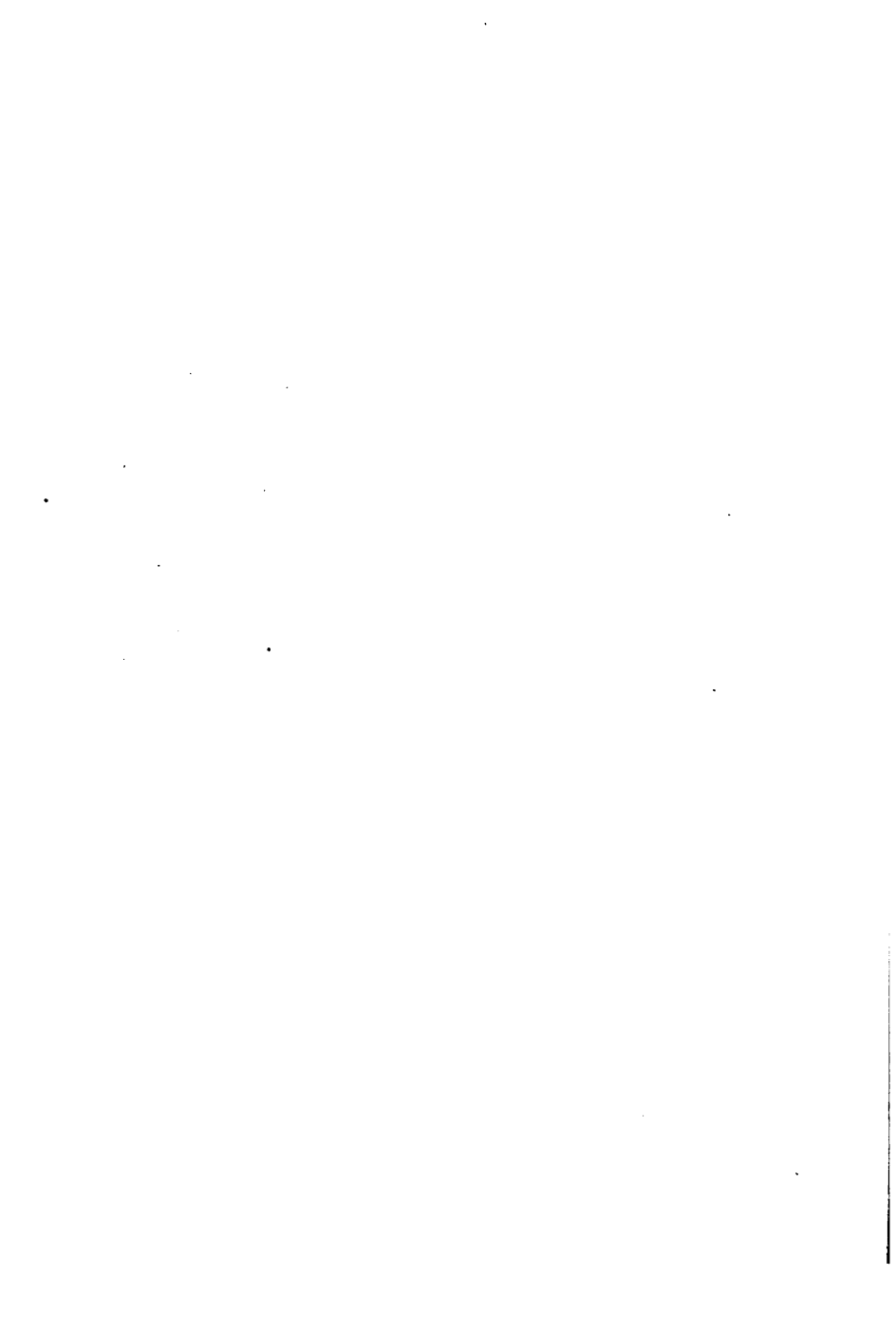
SAMUEL T. DUTTON

SILVER, BURDETT & GILMAN

891

UNIVERSITY OF CALIFORNIA







THE ALPHABET

MORSE SPELLER

DICTION AND SPELLING IN CORRELATION WITH
OTHER SUBJECTS FOR ALL GRADES

WITH SYLLABICATION AND PRIMARY ACCENT

BY

SAMUEL T. DUTTON

SUPERINTENDENT OF SCHOOLS, BROOKLINE, MASS.



SILVER, BURDETT & COMPANY

NEW YORK

CHICAGO

BOSTON

70 2001
AMERICAN

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FOURTEENTH EDITION.

EDUCATION DEPT.

PREFACE.

THE only excuse for adding another to the list of spelling-books, already large, is that in the development of educational methods certain principles have been established, which, if fully recognized, will tend to make teaching less mechanical, more interesting and more effective.

In view of the place that the written exercise is acknowledged to have in teaching spelling, this work is made to contain a large number of carefully selected and well-graded lessons for dictation.

The claims of *correlation* are recognized in the use of instructive material bearing largely upon the subjects pursued in the schools. Thus many important facts and central truths are economically impressed. In the slow and laborious task of gaining a working vocabulary, the potency of *interest* is not disregarded.

Special care has been taken in the selection, from English and American authors, passages of great moral and æsthetic value. These are to be used not only as dictation exercises, but also as memory gems.

At intervals, lists of words are given as *review* lessons. These may be used by the teacher, according to his judgment, as oral lessons, or may be dictated in sentences of his

own forming. Lists of new words are added for use as occasion may require.

Most of the technicalities and perplexities of our language, made so prominent in some spelling-books, have been scrupulously omitted. The aim here is to have spelling ability acquired by practice, under the stimulus of thought and interest.

The book is divided into four parts. Part I. is intended for pupils of the second and third years or grades; Part II. for fourth and fifth grades; Part III. for sixth and seventh grades; and Part IV. for eighth and ninth grades.

Acknowledgments are due to Miss Harriet E. Moses, of the Lawrence School, Brookline, for valuable assistance in the preparation of these lessons.

The selections from the writings of Emerson, Longfellow, Whittier, Holmes and Fisk are used by the kind permission of Messrs. Houghton, Mifflin & Co.

SAMUEL T. DUTTON.

SUGGESTIONS TO TEACHERS.

It is hoped that the attempt to furnish spelling lessons, in the form of exercises for dictation, will be appreciated. It is believed, also, that the omission of technicalities of every sort will be approved.

This is neither a language book, a grammar nor a dictionary. It is a speller, and, if faithfully followed, will teach children to spell. The plan is exceedingly simple. At the close of every exercise, let the next one be read, so that any questions concerning the meaning or pronunciation may be answered.

The pupils are to carefully study, and, in the earlier stages of the work, are to write the exercises. In the recitation, teachers are to dictate each sentence or phrase once only, with distinctness, thus training to habits of attention and application.

The review lessons contain words found in the preceding exercises, and may be used for oral review, if desired.

The *selected words* are new, and it is recommended that pupils be required to write them in sentences.

It is believed that the faithful use of this book will give what the old-fashioned speller failed to give, *viz.*, the possession of a good working vocabulary along the line of the

studies pursued in the schools, as well as upon practical everyday subjects.

It is assumed that the exercises bearing upon geography, science and history will not be used until those subjects have been taught.

The table of contents will aid the teacher in this connection.

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PART I.

LESSONS FOR COPYING AND DICTATION.

I.

The dog is a kind and useful pet.

He can run very fast.

Some dogs are very strong and can draw a cart.

A good dog loves his master and takes care of him.

Dogs love those who treat them kindly.

II.

The cow eats hay and grass.

She has many large teeth in her mouth.

Some cows have long horns.

Do you like milk to drink ?

Butter and cheese are made from milk.

The cow has large, gentle eyes.

III.

The horse is a very useful animal.

He can carry a man on his back and can draw a heavy load.

A child likes a small horse which is called a pony.

I like to brush my pony and keep his coat smooth.

IV.

The ant is a busy little insect.

Ants build their houses of sand with much care.

It is great fun to watch them at work.

They gather food and carry it into their houses.

They sometimes help each other when the load is heavy.

V.

The bee is another wise and busy insect.

Bees get honey from the flowers and store it up for the winter.

Did you ever look into a bee-hive?

How neat and clean the bees keep their homes.

The queen bee has small wings and does not often leave the hive.

The work-bees fly far away and bring home their honey.

VI.

The squirrel is a playful little animal.

He has bright eyes and a soft fur coat.

Did you ever see a squirrel eating a nut?

His teeth must be very sharp.

The squirrel lives in trees and makes his nest of leaves.

Do not throw stones at the squirrels that live in your yard.

VII.

In the spring the days grow longer and we see the green grass.

The sun is bright and the air is soft.

The little buds on the trees begin to grow and the green leaves soon come out.

How pleasant it is to see the spring flowers.

Soon Mother Earth will have a new spring dress.

VIII.

One of the first spring flowers is the violet.

It is purple and has a slender stem.

It likes to grow in the woods.

We can see many little seeds up in the maple tree.

They hold on by their stems.

They have little wings and will soon fly away.

IX.

We will plant a bean in the soft earth.

The sun makes the ground warm and the rain-drops make it moist.

Soon Mr. Bean comes peeping from his bed.
He wants to climb up into the sunshine.
Sometimes he grows to be very tall.
See those little bean pods.
Each pod has five little beans in it.

X.

God made the sky that looks so blue,
He made the grass so green ;
He made the flowers that smell so sweet,
In pretty colors seen.

—*Jane Taylor.*

XI.

I can hear frogs croaking in the pond.
They seem to be very happy because spring has
come.
Did you ever see a frog dive into the water ?
Do you like to see boys throw stones at the
frogs ?
Have you heard the story about the frogs
who wanted a king ?

XII.

The robin comes early in March and stays un-
til fall.
She builds her nest in the trees.
It is made of straw and mud.

The robin sings sweetly early in the morning.
Have you seen her pretty blue eggs in the nest?
Please do not touch them.

When the little robins come, the mother bird
brings food for them.

XIII.

Tongues to talk have you and I;
God has given the little fly
No such things, so he sings
With his buzzing wings.

XIV.

When the spring is gone summer comes.

Now the trees are full of leaves.

The little baby plants are getting quite strong.

The sun and the rain help them to grow.

They grow at night while you and I are asleep.

Sometimes it is too hot to play in the sun.

XV.

Who is that working in the field?

It is a farmer. He is digging up weeds among
the corn. When it is noon he goes home for
dinner. When the sun goes down he drives
home the cows and milks them. He goes to bed
early at night and rises with the sun.

XVI.

What are these men doing? They are cutting grass and drying it in the sun. This is the way to make hay. When it is dry they rake it and carry it into the barn. When winter comes the cattle and horses will have sweet hay to eat. It is great sport to ride into the barn on a load of hay.

XVII.

We tread through fields of speckled flowers,
As if we did not know
Our Father made them beautiful
Because He loves us so.

—*Alice Cary.*

XVIII.

All people like to spend the summer in the country. They like to be among the trees and flowers. The song of the birds seems like sweet music. They enjoy riding over the hills and through the forest. Sometimes they climb a high mountain. They always come home very hungry.

XIX.

Did you ever go fishing in the lake?
How smoothly the boat glides through the water. We use oars to row with. Now put

some boat or piece of wood and they go into the water. When a fish comes by and pulls him into the boat.

How many are there to get away?
Is there any danger for them now?



What are these white spots in the water? Let us row to them and see. They are beautiful white flowers. They are called water lilies. See what long stems they have. Do you ever smell anything so sweet? Let us carry some home with us.



How quickly the summer has gone. Now autumn has come. The plants have nearly finished their work. They have made many seeds. They will soon lose their leaves. The roots of some plants keep alive all winter. The leaves of some trees turn beautiful bright colors. When they have all fallen off the trees look as if they were dead. They are only sleeping until the winter is over.



The weather is cool in autumn.
Jack Frost is busy every night. He opens the

prickly houses in which the beechnuts live. Soon the little nuts fall to the ground. Jack Frost also turns the little chestnuts out of doors. The squirrels carry them away to their nests. Boys and girls also are fond of gathering chestnuts.

XXIII.

In the autumn the farmer gathers apples, pears, plums, grapes and peaches. He carries some of them to the market. He gathers the corn and other grains into his barn. Did you ever help to husk corn? It is pleasant to see yellow ears of corn in a great heap. When the corn is ground it is called meal. When wheat is ground it is called flour.

XXIV.

Gone hath the spring with all its flowers,
And gone the summer's pomp and show.
And autumn in his leafless bowers,
Is waiting for the winter's snow.

—*John G. Whittier.*

XXV.

Winter is the coldest season of the year. The days are much shorter than in summer. The earth wears a soft, white blanket. It is called snow. How well Mother Nature takes care of her children. She sends the snow to keep the

little plants warm. They sleep through the long, cold winter. See the frost on the windows. How it sparkles in the sunlight.

XXVI.

How the wind blows the snow about.

It is fun to wade through the drift.

Did you ever take a sleigh-ride?

Who does not like to hear the sleigh bells?

The pond is covered with thick ice. It is so smooth one can skate very fast. Let us build a fire on the ice. How cheerful it makes the dark night.

XXVII.

Christmas is the best day of winter.

One of my presents was a pair of new skates. My brother John had a sled and a knife. One stocking was full of popcorn. We had dinner with grandmother and grandfather. I wish you might have seen the plum pudding. After dinner we played games and sang songs. When we drove home the moon and stars shone brightly.

XXVIII.

The frost looked forth one still, clear night,

And whispered: "Now, I shall be out of sight,

So through the valley, and over the height,

In silence I'll take my way."

—*H. F. Gould.*

XXIX.

Our house is on Harvard Street. It is painted white and has green blinds. A broad walk leads to the front door. There is a wide hall with two rooms on each side. At the end of the hall is a pair of stairs. A tall clock stands on the landing. One front room is the parlor, the other is the study. Next to the study is the kitchen, and back of the parlor is the dining-room.

XXX.

In the parlor I can see five chairs, a sofa and a piano. The walls are covered with a light paper. In one corner of the room is a table. On the table are some books and a lamp. There is a soft, blue carpet on the floor. A little girl is playing on the piano. Now let us look into the study.

XXXI.

Here are many shelves filled with books. Father sits in this armchair at his desk. Coal is burned in the grate. Jane sweeps and dusts every morning. Every Saturday she cleans the windows. Walk up stairs and look into one of the chambers. The furniture is all painted white. There is a pretty rug on the floor. The curtains are white muslin.

XXXII.

The bell rings for breakfast. We are all ready. Will you have an orange? No, I thank you. I seldom eat fruit. The coffee is hot. I like beefsteak and potatoes. Please hand me the salt and pepper for my egg. I prefer toast to rolls. Where is my teaspoon? Now we must go to school.

XXXIII.

Dinner is ready. How hungry we all are. Be careful and do not spill your soup. I think this bread is new. Where is my napkin? You must have dropped it on the floor. Will you have beef or mutton? Please give me also peas, corn and squash. For dessert we have pudding and pie.

XXXIV.

What a pleasant schoolroom. There are forty pupils in the third grade. The desks are made of maple. Some fine pictures hang on the walls. The teacher sits in an armchair. At ten o'clock we sing songs and play games. We learn our lessons and then read a story book. Our teacher is kind and we try to help her.

XXXV.

In the village is a large store. What do we need this morning? Coffee, sugar, salt and flour. The clerk will grind the coffee and put it in a paper bag. How heavy the flour is. The flour costs \$1.20, the coffee, .40, the sugar, .30, and the salt, .10. How much does it all cost? Now we must hurry, or we shall be late for dinner.

XXXVI.

Little deeds of kindness,
Little words of love,
Make our Earth an Eden,
Like the heaven above.

XXXVII.

The Indians once lived in these forests. Their houses were made of bark and boughs and were called wigwams. They painted their faces and put feathers in their hair. The Indian wife was called a squaw. She did all the hard work. The men used the bow and arrow in hunting. The Indian boat was made of birch bark and was called a canoe.

XXXVIII.

The Indians had no schools or churches.
The Indian boys learned to hunt and fish, but

did not learn to read or write. When white men first came to the country they found many tribes of Indians. Some were kind and brought them corn and fish to eat. I am sorry some white men treated the Indians badly and drove them from their lands.

XXXIX.

Let us look at this fine maple tree. Its parts are the roots, the trunk, the branches and the leaves. In the centre of the trunk is the pith. Around the pith is the wood, which is hard, and on the outside is the bark. If we cut across the trunk we find a number of circles. Each circle shows how much the tree grew in one year.

XL.

The stem of the leaf is called its petiole. The petiole, in the maple leaf, is green. The five large branches in the blade are called veins. The midvein runs from the petiole through the middle of the blade. The part of the leaf next to the petiole is called its base and the other end is its apex.

XLI.

Woodman, spare that tree !

Touch not a single bough !

In youth it sheltered me,
 And I'll protect it now.
 'Twas my forefather's hand
 That placed it near his cot :
 There, woodman, let it stand ;
 Thy ax shall harm it not.

—*George P. Morris.*

XLII.

A little fly sat down to rest upon the head of an ox. Just as he was about to fly away he said to the ox: "Perhaps you would like to have me go now?" "I did not know you were there," said the ox. "Go when you get ready." The little fly thought a great deal of himself.

Have you ever seen people who were like him?

XLIII.

"A little boy was dreaming
 Upon his mother's lap,
 That the pins fell out of all the stars,
 And the stars fell into his cap.
 "So when his dream was over,
 What should that little boy do?
 Why, he went and looked into his cap
 And found it wasn't true."

XLIV.

A little light once fell in love with itself. It thought the sun, moon and stars were no brighter.

Many times it said to other people, "See how bright I am!" Once when it had said this, the wind blew just a little, and out it went. A man had to light it again, and as he did so, he said, "The stars never go out."

XLV.

"I cannot do much," said a little star,
"To make the dark world bright,
My silver beams cannot pierce far
Into the gloom of night ;
Yet I am a part of God's great plan,
And so I will do the best I can."

XLVI.

An old man found a bad boy stealing apples in one of his trees. When told to come down, he did not obey. The old man threw grass at him, but this only made the boy laugh. "Very well," said the old man, "I will try throwing stones." This soon brought the boy down from the tree. He asked the old man's pardon.

XLVII.

A lion was sleeping under an oak tree. Some little mice ran over his back and waked him. He put his great paw upon one of them, but let him go as the mouse begged for his life. Soon after

this the lion fell into a hunter's net and began to roar loudly. The mouse heard his voice and, like a good friend, went and began to gnaw the knots of the net until the lion was free.

XLVIII.

“Be kind to all you chance to meet,
In field or lane or crowded street ;
Anger and pride are both unwise,
Vinegar never catches flies.”

XLIX.

In a certain house were many mice. A cat was found who began to catch and eat some of them. Upon this the mice no longer came down from the upper shelf. The sly, old cat hung by her hind legs from a peg on the wall and seemed to be dead. A cunning old mouse looked over the edge of the shelf and said, “I would not trust you even if your skin were stuffed with straw.”

L.

“The cunning old cat lay down on a mat
By the fire in the oaken hall ;
‘If the little mice peep, they’ll think I’m asleep ;’
So she rolled herself up like a ball.

“ Nibble, nibble, nibble, went the mice,
And they licked their little paws ;
Then the cunning old cat sprang up from the mat,
And caught them all with her claws.”

LI.

That part of the earth, in which plants grow, is called soil. If we dig through the soil we always find rocks. One very common rock is called granite. This contains three kinds of crystals—quartz, felspar and mica. Metals are found deep in the ground, where they form veins.

LII.

Little by little the great rocks grew,
Long ago when the earth was new ;
Slowly and silently, stately and free,
Cities of coral under the sea
Little by little are builded, while so
The new years come and the old years go.

REVIEW LESSONS.

LIII.	LIV.	LV.
dog	large	brush
kind	teeth	keep
use'ful	mouth	coat
pet	some	smooth
run	long	called
fast	horns	ant
strong	milk	bus'y
can	drink	lit'tle
draw	but'ter	in'sects
cart	cheese	build
good	made	their
love	from	house
very	gen'tle	sand
mas'ter	eyes	with
take	horse	much
care	an'i mal	care
him	car'ry	great
those	man	fun
treat	back	watch
them	heav'y	work
cow	load	gath'er
eat	child	food
hay	small	some'times
grass	po'ny	help
man'y	which	each

LVI.	LVII.	LVIII.
bee	sharp	first
an oth'er	nut	vi'o let
wise	live	pur'ple
hon'ey	tree	slen'der
flow'er	nest	woods
store	leaf	ma'ple
win'ter	throw	seed
look	stone	hold
hive	your	stem
neat	yard	plant
clean	spring	bean
queen	day	ground
small	grow	warm
wings	long'er	rain'drops
leave	green	moist
often	air	peep'ing
fly	bud	bed
far	come	want
away	out	climb
home	pleas'ant	sun'shine
squir'rel	see	tall
play'ful	moth'er	bean'pods
bright	earth	five
soft	new	God
must	dress	blue

LIX.	LX.	LXI.
smell	morn'ing	field
sweet	egg	farm'er
pret'ty	please	dig'ging
col'or	bring	weed
hear	tongues	corn
frog	talk	when
croak'ing	giv'en	noon
pond	such	a mong'
be cause'	thing	goes
dive	buzz'ing	din'ner
wa'ter	gone	drive
boy	sum'mer	rises
heard	full	men
sto'ry	ba'by	cut'ting
king	plant	dry'ing
rob'in	quite	rake
ear'ly	strong	barn .
March	rain	win'ter
stay	night	cat'tle
un til'	while	sport
fall	a sleep'	ride
build	hot	tread
mud	play	speck'led
straw	who	fa'ther
sing	that	beau'ti ful

LXII.

peo'ple
spend
coun'try
a mong'
song
seem
mu'sic
en joy'
through
forest
fore'fath ers
high
mount'ain
hun'gry
ev'er
fish'ing
lake
boat
glide
use
oars
row
bait
hook
drop

LXIII.

bite
try
pull
hard
bet'ter
white
spot
pond-lil'ies
quick'ly
au'tumn
near'ly
fin'ished
lose
root
a live'
turn
bright
fall'en
dead
sleep'ing
weath'er
cool
Jack Frost
ev'er y
o'pen

LXIV.

prick'ly
beach
al'so
chest'nuts
girls
fond
ap'ple
pear
plum
grapes
peach'es
mark'et
grain
husk
yel'low
ear
heap
meal
wheat
flour
hath
pomp
show
snow
cold'est

LXV.	LXVI.	LXVII.
month	knife	door
year	stock'ing	there
short'er	pop'corn	hall
wear	grand'moth er	wide
blank'et	grand'fath er	two
chil'dren	might	room
warm	pud'ding	each
win'dow	game	side
spar'kle	moon	end
wind	stars	stairs
blow	shone	tall
a bout'	forth	clock
wade	still	stand
drift	clear	land'ing
sleigh'-ride	whis'pered	par'lor
skate	sigh	oth'er
fire	val'ley	stud'y
ice	height	next
cheer'ful	si'lence	kitch'en
Christ'mas	paint'ed	back
best	blinds	din'ing
pres'ent	broad	chair
pair	walk	so'fa
sled	lead	pi an'o
broth'er	front	wall

LXVIII.	LXIX.	LXX.
cov'ered	break'fast	des sert'
pa'per	read'y	pie
cor'ner	or'ange	for'ty
ta'ble	thank	pu'pil
book	sel'dom	third
lamp	fruit	grade
car'pet	cof'fee	desk
shelves	beef'steak	harm
sit	po ta'toes	pic'ture
arm'-chair	hand	hang
fire	salt	wall
coal	pep'per	ten
grate	tea'spoon	o'clock'
burn	school	learn
sweep	oat'meal	les'son
dust	care'ful	read
Sat'ur day	spill	teach'er
cham'ber	soup	vil'lage
fur'ni ture	break	need
pret'ty	nap'kin	sug'ar
rug	dropped	salt
cur'tain	floor	clerk
mus'lin	mut'ton	grind
ring	peas	cost
bell	squash	hur'ry

LXXI.	LXXII.	LXXIII.
late	ca noe'	blade
deed	church	vein
kind'ness	fish	mid'dle
word	write	next
E'den	tribes	base
heav'en	brought	oth'er
In'dians	sor'ry	end
once	treat'ed	a'pex
for'est	bad'ly	wood'man
bark	drove	spare
boughs	land	touch
wig'wam	look	sin'gle
paint'ed	part	youth
face	trunk	shel'tered
feath'er	branch'es	pro tect'
hair	cen'tre	fly
wife	pith	sat
squaw	a round'	down
work	out side'	rest
used	cut	head
bow	a cross'	ox
ar'row	num'ber	just
hunt'ing	cir'cle	per haps'
boat	grew	would
birch	pet'i ole	know

LXXIV.	LXXV.	LXXVI.
thought	best	meat
deal	steal'ing	lane
him self'	o bey'	crowd'ed
dream'ing	laugh	street
lap	par'don	an'ger
pins	li'on	pride
fell	oak	un wise'
cap	mice	vin'e gar
should	back	catch
why	waked	flies
went	paw	cer'tain
true	mouse	be gan'
light	begged	up'per
it self'	life	sly
times	hunt'er	hind
blew	net	peg
nev'er	roar	leg
dark	loud'ly	cun'ning
world	voice	edge
sil'ver	good	trust
brand	friend	skin
pierce	gnaw	stuffed
gloam	knot	straw
yet	free	mat
plan	chance	fire

LXXVII.

rolled	rock	met'al
ball	gran'ite	ground
nib'ble	com'mon	slow'ly
licked	con tain'	si'lent ly
sprang	crys'tal	state'ly
caught	quartz	cit'ies
claws	feld'spar	cor'al
soil	mi'ca	sea

SELECTED WORDS TO BE WRITTEN
IN SENTENCES BY THE PUPIL.

LXXVIII.

melt	dol'lar
own	wait
a gree'	fare
urge	cheap
plen'ty	owe
ease	tight
a gain'	cell
sew	keen
bound	cheat
reed	bar'gain
val'ue	cent
sor'ry	gal'lon

LXXIX.

fair	shade
sell	sau'cer
bar'rel	plate
deer	loaf
fail	die
roam	heel
toast	fuel
chi'na	least
jel'ly	mist
sauce	dye
weak	scour
hour	hedge

LXXX.	LXXXI.	LXXXII.
height	cloak	kite
fight	gloves	shov'el
lawn	mit'tens	en'gine
breath	cones	cray'on
shoot	clo'ver	chalk
smoke	as'ters	tray
pit'y	glos'sy	flag
meek	nail	blunt
marsh	stove	tow'el
no'tice	crack	gut'ter
search	cous'in	track
road	un'cle	cro'cus
flood	aunt	dan'de li on
ditch	sleigh	toad
rowed	yes'ter day	crow
raise	e'ven ing	al'der
choice	hood	worm
shal'low	whale	ber'ries
judge	geese	toes
squall	tal'low	beak
a'pron	moss	va'ca tion
dull	cra'dle	haste
comb	stage	freeze
stock'ings	thim'ble	cure
rub'bers	blocks	cube

LXXXIII.

scrap
 knob
 notch
 crutch
 crumb
 staff
 dare
 bruise
 shawl
 verse
 pearl
 arch
 starch
 dwarf
 starve
 vault
 birth
 worse
 pan'sy
 feast
 skein
 speech
 badge
 match
 barge

LXXXIV.

sketch
 stitch
 wreck
 throat
 porch
 rogue
 choke
 ghost
 twist
 or'der
 hon'es ty
 fierce
 wrist
 quince
 prize
 de feat'
 wis'dom
 let'tuce
 stu'pid
 dunce
 cap'i tal
 base'-ball
 waves
 grey
 prop'er

LXXXV.

par'ents
 let'ter
 awl
 broil
 brute
 aw'ful
 ax'is
 strain
 ar'bor
 stripe
 nurse
 straw
 ax'le
 a loft'
 streak
 camp
 co'sy
 sum
 ques'tion
 mark
 fact
 flash
 track
 tramp
 band

LXXXVI.	LXXXVII.	LXXXVIII.
plank	po'et	oth'er
of'fi cer	la'dy	doll
bleak	coin	goat
lease	o'pen	pew
check	cord	dime
lend	fa'ble	scald
theme	can'dle	carve
col'lege	skip	wool
bridge	slide	cra'dle
bath	tart	crib
tent	muff	pew'ter
flock	lace	tongs
bunch	silk	wharf
toy	wolf	dip'per
wren	bug	pea'nut
chart	duck	ea'ger
map	owl	roos'ter
crew	fog	wolf
kit'ten	noon	fair'y
peak	bank	pus'sy
team	fort	pile
float	peace	crow
chase	war	rab'bit
pain	ar'my	doves
purse	host	guess

PART II.

I.

In a good school, teacher and pupils help each other. All find pleasure in performing hard tasks. Pupils are diligent and do not disturb those near them. All lessons are faithfully learned. The schoolroom is tidy and there are growing plants in the windows. Books are handled with care and so are neither torn nor soiled.

II.

The girls and boys that do their best,
Their best will better grow,
But those who slight their daily task,
They let the better go.
What if your lessons should be hard,
You need not yield to sorrow ;
Work bravely at your task to-day,
'Twill lighter be to-morrow.

III.

When we do anything over and over again we form a habit. Children are ever forming habits, either good or bad. We form habits of standing, walking and sitting; of speaking, writing and reading. If we always do our very best, our habits will be good. If we are lazy and careless, our habits are sure to be bad. Character has been said to be but a bundle of habits.

IV.

The tissue of the life to be
We weave with colors all our own,
And in the field of Destiny,
We reap as we have sown.

—*Raphael.*

V.

Good health is the secret of happiness. Eat plain food, go to bed early, play out of doors, and you will be healthy. Children who have good health enjoy their school. At recess they love to run, jump and shout. In the school-room they can study hard and not feel tired. Healthy boys and girls grow to be strong men and women. Some people are never ill, because they take care of their health.

VI.

We live in deeds, not years ; in thoughts, not breaths ;
In feelings, not in figures on the dial.
We should count time by heart-throbs. He most lives
Who thinks most, feels the noblest, acts the best.

—*Bailey.*

VII.

How little we can accomplish without the help of others. We depend upon others for the food we eat and the clothes we wear. Our breakfast, dinner and supper are made up of things that come from many countries. We rely upon the farmer, the sailor and the merchant to provide for our wants. The whole world is a busy hive of workers.

VIII.

No longer let me shun my part
 Amid the busy scenes of life,
 But with a warm and generous heart
 Press onward in the glorious strife.

—*J. H. Bryant.*

The meal unshared is food unblest;
 Thou hoard'st in vain what love should spend;
 Self-ease is pain; thy only rest
 Is labor for a worthy end.

—*Whittier.*

IX.

My son, forget not my law, but let thine heart keep my
 commandments; for length of days and long life shall
 they add to thee.

Let not mercy and truth forsake thee; bind them about
 thy neck; write them upon the table of thy heart. So
 shalt thou find favor and good understanding in the sight
 of God and man.

X.

I count this thing to be grandly true :
 That a noble deed is a step toward God—
 Lifting the soul from the common sod
 To a purer air and a broader view.

—*Holland.*

XI.

A good name is rather to be chosen than great riches.
 By humility and the fear of the Lord, are riches and
 honor and life.

Boast not thyself of to-morrow, for thou knowest not what a day may bring forth.

Let another man praise thee, and not thine own mouth : a stranger, and not thine own lips.

XII.

Within himself he found the law of right,
He walked by faith, and not the letter's sight,
And read his Bible by the Inward Light.

—*Whittier.*

XIII.

There are three kingdoms of nature—the animal, vegetable and mineral. Most of our food comes from the animal and vegetable kingdoms. The means by which we obtain vegetable products from the earth is called agriculture. It is interesting to know that different kinds of food contain the same elements.

XIV.

Nature, like a loving mother, is ever trying to keep land and sea, mountain and valley, each in its place, to hush the angry wind and waves, balance the extremes of heat and cold, of rain and drought, that peace, harmony and beauty may reign supreme.—*E. C. Stanton.*

XV.

Milk, butter and cheese form an important part of our diet. They are called dairy products. With bread, we could live on these alone. Milk varies in quality, according to the food given to the cows. With the old-fashioned churn, two or three hours were required to produce but-

ter. Now it is made by means of a machine in a few minutes. One pound of cheese contains as much nourishment as two pounds of beef.

XVI.

The most ancient of the cultivated fruits is the grape. Certain kinds of grapes, by being dried in the sun, can be converted into raisins. Another variety furnishes the valuable fruit known as currants. I have read of a cluster of Hamburg grapes, the weight of which was thirteen pounds and four ounces.

XVII.

BOSTON, September 10, 1896.

MR. HENRY W. SMITH,

Dear Sir :

Please send to No. 215 Maple St., 10 lbs. flour, 6 oz. black pepper, 3 doz. eggs, 5 lbs. oatmeal, 2 qts. milk, 3 gals. vinegar, 1 lb. crackers, and $\frac{1}{2}$ doz. lemons.

Yours truly,

SARAH TURNER.

XVIII.

The earth is one of eight planets which are continually whirling about the sun. It is sometimes called a great ball of land and water, surrounded by a shell of air.

Great, wide, beautiful, wonderful world,
With the wonderful water round you curled,
And the wonderful grass upon your breast,
World, you are beautifully dressed.

XIX.

Sometimes the earth moves between the sun and the moon and casts a shadow on the moon. The edge of this shadow always looks like part of a circle. Do you know the shadow's name? Can you prove the earth round? What happens when the moon is between the earth and sun?

XX.

The oceans cover about three-fourths of the earth's surface. They wholly, or partly, separate the continents from one another. All water belongs to the ocean. The sun borrows it, the winds carry it, and the springs and rivers return it. We must thank the sun and wind for the rain and showers. Arms and passages of the ocean are classed as seas, gulfs, bays, sounds, and straits.

XXI.

The land has many valleys and mountains, so has the sea-bottom. Some mountains rise high above the surface of the sea. Their tops are called islands. The wind blows sand over the desert and also makes waves on the surface of the ocean, but the deep sea is always still. Strange plants and animals have lived and multiplied upon the land and in the water.

XXII.

Have you visited the beach or seashore?

Most parts of the sea near the land are shallow. Far from the shores the sea is in many places two miles deep, and in some places the bottom is four or five miles below

the surface. No sunshine reaches the deep parts of the sea. The deep water is always cold and dark.

XXIII.

Plants and animals live on the land. Seaweeds, fish, and many curious creatures abound in the shallow waters near the seashore. Fish are found in many lakes and rivers. Some kinds of fish are found in fresh water only, but others from the salt water go into the rivers to spawn or deposit their eggs.

XXIV.

Have you seen the "Big Dipper"? Can you use the pointers and find the North Star? Face the north. East is on the right, and west is on the left. Can you find northeast, southeast, southwest and northwest? About March 21 and September 22 the sun rises due east and sets due west. What happens, and why?

XXV.

A continent is not round ; it is irregular in shape. We can find peninsulas and capes projecting from its coast.

A high, rocky cape can be seen far out at sea. It is called a promontory. Can you think of a large peninsula? It is joined to other land by a narrow strip called an isthmus. What a queer name! It is a Greek word, meaning neck.

XXVI.

Shall we visit little boys and girls of other countries? Can we find children with black skins, woolly hair, flat

noses, and thick lips? Some children know how the tea-plant grows. Let our minds find the Negroes, Chinese, Turks, Arabs, Lapps, Finns and Eskimos. We will ask the Lapps and Finns about the reindeer, and the Eskimos about their dogs.

XXVII.

Mother Nature gives food to her baby seeds. Open a seed and find the meat. Plant many seeds and watch their growth. Can you find the germinating plantlet and the cotyledons? The cotyledons nourish the plantlet until Mother Nature gives it roots.

XXVIII.

“As wonderful things are hidden away
In the heart of a little brown seed,
As ever were found in a fairy nut
Of which children sometimes read.

“Over its pretty shining coat
We sprinkle the earth so brown,
And the sunshine warms its lowly bed,
And the rain comes dropping down.”

XXIX.

Plants need light, heat and moisture. Do the plumule and radicle grow at the same time? Open the cotyledons and see the tiny plumule. The radicle is hiding itself in the soil while the little plumule is forcing its way upward into the beautiful sunlight.

XXX.

“Patter, patter, the soft, warm rain
 Knocks at the tiny door,
 And two little heads come peeping out,
 Like a story in fairy lore.

“One is the Radicle creeping down,
 At first but a wee, white root,
 The other the Plumule : above the soil
 It sends up a little green shoot.”

XXXI.

We eat the fleshy roots of some plants. Have you eaten a beet, a radish or a carrot? The tender roots have mouths through which they absorb moisture from the ground. The roots of some plants live year after year; some die the second season, and others perish when Jack Frost finds them in the autumn.

XXXII.

“Steadily up toiled the slender stem,
 And only its work it heeds ;
 A leaf appears, bud, blossoms and fruit;
 Last of all come the little seeds.

“Then its work all done, if an annual,
 It has had its brief, bright day,
 And now at the touch of Frost-king’s breath
 It withers and fades away.”

XXXIII.

Air is composed of oxygen and nitrogen. If one-fifth is oxygen, what part of the air is nitrogen? We cannot

see air. The air surrounding the earth is called its atmosphere. It is from 50 to 200 miles high. At the sea-level air is dense, on high mountains it is rare. Air in motion is called wind.

“The wonderful air is over me,
And the wonderful wind is shaking the tree ;
It walks on the water, and whirls the mills,
And talks to itself on the top of the hills.”

XXXIV.

An animal will die in nitrogen, not because nitrogen is a poison, but because the animal needs oxygen. Oxygen supports combustion. Our lives and the lives of plants and animals depend on the presence of oxygen. It is through its influence that fires blaze and lamps give light.

XXXV.

Water contains twice as much hydrogen as oxygen. Hydrogen is colorless and odorless. It is lighter than air. Balloons have been filled with hydrogen. If we place a burning match near the open end of a tube of hydrogen, and allow the hydrogen to unite with the air, an explosion occurs. Would miners be in less danger if hydrogen were not odorless?

XXXVI.

From marble we can obtain lime and carbon dioxide. In certain countries, carbon dioxide oozes from the earth. There is a grotto near Naples in which a man can walk, but it is not safe for a dog to enter. Carbon dioxide is heavier than air and it is a poisonous gas.

XXXVII.

Blood circulates through the body. Oxygen is taken into the lungs. It makes the blood red and the body warm. The body takes oxygen from the blood and gives carbon dioxide in return. We exhale impure air. It is unwise to breathe the same air over and over again.

XXXVIII.

Frozen water is called ice. Ice is lighter than water. We think of water as a liquid. We see it in the rivers, lakes, and ocean. The sun gives wings to the water and it flies away in the form of gas. When cool, we see it in the clouds, the dew, and the rain; when very cold, we look for frost and snow.

XXXIX.

Study the three parts of a candle flame—the inner cone, the middle cone and the outer cone. The inner cone contains an unburned gas. The middle cone gives light and heat, hydrogen burns and carbon glows. The outer cone gives little light and the greatest heat.

XL.

When Columbus explained his plans to the King and Queen of Spain, they were much interested. With the money which they gave him, he fitted out three small vessels and set sail across the Atlantic. On the twelfth of October, 1492, he discovered the New World. Columbus soon returned to Spain and carried some Indians with him. He was received with much honor by the King and Queen. He believed he had found India.

XLI.

So far as Columbus knew, no one had ever crossed the Atlantic Ocean, or even heard that it had any west coast at all. True, Norsemen had long before crossed northern portions of the Atlantic and discovered Iceland, Greenland and Vineland. But there is no evidence, so far as I am aware, that Columbus had ever heard of these discoveries. No; Columbus was inspired by faith, not by sight, not even by science.—*Boardman.*

XLII.

Immortal morn, all hail!
That saw Columbus sail
By Faith alone!
The skies before him bowed,
Back rolled the ocean proud,
And every lifting cloud
With glory shone.

XLIII.

The oldest settlement in the United States was made by the Spanish at St. Augustine, August 28, 1565. In 1605, the French planted a colony on the west coast of Nova Scotia. In 1609, Henry Hudson sailed up the river that now bears his name. He thought it a very beautiful river. The Dutch soon had large trade with the Indians.

XLIV.

An evil day came upon us. Your fathers crossed the great water and landed on this island. Their numbers were small. They found friends and not enemies. They told us they had fled from their own country for fear of

wicked men and had come here to enjoy their religion. They asked for a small seat. We took pity on them, granted their request, and they sat down amongst us. We gave them corn and meat; they gave us poison in return.—*Red Jacket* (1805).

XLV.

He learned of every bird its language,
Learned their names and all their secrets,
How they built their nests in summer,
Where they hid themselves in winter.
Of all the beasts he learned the language,
Learned their names and all their secrets,
How the beavers built their lodges,
Where the squirrels hid their acorns,
How the reindeer ran so swiftly,
Why the rabbit was so timid.

—*Longfellow.*

XLVI.

Queen Elizabeth helped to fit out several companies of men who made settlements in America. Sir Francis Drake was the first Englishman to travel around the world. He first explored the coast of California. Upon his return to England, he received great honors from the Queen. Sir Walter Raleigh made several voyages to the eastern coast of America.

XLVII.

In 1607, Captain John Smith came with three vessels and sailed up the James River. He selected for a settlement a place which was called Jamestown, in honor of their king. Smith made friends with the Indians and

governed the colony wisely. After his return to England there was much suffering, until ships came, bringing food and clothing. This was the beginning of the rich and powerful colony of Virginia.

XLVIII.

On December 21, 1620, the Pilgrims landed on Plymouth Rock. They built houses on the banks of a brook and surrounded the whole town with a stout, wooden fence. In the woods were deer and wild turkeys, and they found many kinds of fish in the sea, so that at first food was abundant; but the winter was very severe, and about half their number died before spring.

XLIX.

I see them, escaped from these perils, pursuing their all but desperate undertaking, and landing at last, after five months' passage, on the ice clad rocks of Plymouth, weak and weary from the voyage, poorly armed, scantily provisioned, depending on the charity of their ship-master for a draught of beer on board, drinking nothing but water on shore, without shelter, without means, surrounded by hostile tribes.—*Edward Everett.*

L.

The breaking waves dashed high
On a stern and rock-bound coast;
And the woods against the stormy sky,
Their giant branches tossed;

And the heavy night hung dark
The hills and waters o'er,
When a band of exiles moored their bark
On the wild New England shore.

—*Felicia Hemans.*

LI.

William Penn founded a city named Philadelphia, which means brotherly love. It grew rapidly and in three years had six hundred houses. Many of these settlers were Quakers. Wharves were built on the banks of the river and soon many ships were seen there. Philadelphia has grown to be one of the largest cities of America.

LII.

In that delightful land which is washed by the Delaware's
waters,
Guarding in sylvan shades the name of Penn, the apostle,
Stands on the banks of its beautiful stream the city he founded.
There all the air is balm and the peach is the emblem of beauty,
And the streets still re-echo the names of the trees of the forest,
As if they fain would appease the Dryads whose haunts they
molested.

—*Longfellow.*

LIII.

Life in old colony times was full of hardships. The settlers had to protect themselves from the Indians and get enough to eat and to wear. The men raised hemp and flax, which the women made into clothes by spinning and knitting. They built the houses of logs and often had but two rooms. In one room was a big fireplace where the cooking was done. In the other were the beds and a ladder which led up to the garret.

LIV.

God bless our Fathers' Land !
Keep her in heart and hand
One with our own !

From all her foes defend,
Be her brave People's Friend,
On all her realms descend,
Protect her Throne!

Lord, let War's tempest cease,
Fold the whole Earth in peace
Under Thy wings!

Make all Thy nations one,
All hearts beneath the sun,
Till Thou shalt reign alone,
Great King of kings.

—*O. W. Holmes.*

LV.

In those days people met on Sunday in a log meeting-house. They carried their rifles with them, as the Indians sometimes attacked them suddenly. The men sat upon benches on one side of the church and the women on the other. The seats were not comfortable and all had to sit very still. The schoolhouse also was made of logs and was warmed by a wide fireplace. There were few books, and the chief studies were reading, spelling and arithmetic.

LVI.

All the early settlers of New England paid great attention to instructing their children, first at home, or in the ministers' houses, and then in public schools. In 1647, the Massachusetts Colony passed a law providing that every township of fifty householders should appoint a schoolmaster to teach the children to read and write; and that his wages should be paid by the parents, or the public at large, according to the decision of the majority of the inhabitants.—*Campbell.*

LVII.

Hail to the land whereon we tread,
Our fondest boast ;
The sepulchre of mighty dead,
The truest hearts that ever bled,
Who sleep on glory's brightest bed,
A fearless host !
No slave is here—our unchained feet
Walk freely as the waves that beat
Our coast.

—*J. G. Percival.*

LVIII.

In 1765, the English passed a law laying a tax on every newspaper and public document used in the colonies. The people were very angry and held meetings to protest against the law. They refused to use the stamp paper and burned it on the wharves. This law was repealed the following year. Parliament next aroused bitter feelings in America by putting a duty on tea. The people refrained from drinking tea and threw a whole cargo of it into the water of Boston Harbor.

LIX.

The voice of Patrick Henry from the mountains answered that of James Otis by the sea. Paul Revere's lantern shone along through the valley of the Hudson and flashed along the cliffs of the Blue Ridge. The scattering volley of Lexington Green swelled to the triumphant thunder of Saratoga.—*George W. Curtis.*

LX.

Then marched the brave from rocky steep,
From mountain river swift and cold ;
The borders of the stormy deep,
The vales where gathered waters sleep,
Sent up the strong and bold.

—*Bryant.*

LXI.

When in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth the separate and equal station to which the laws of nature and nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to separation.—*Thomas Jefferson.*

LXII.

For thee we daily work and strive,
To thee we give our love,
For thee with fervor deep we pray
To Him who dwells above.
O God, preserve our Fatherland !
Let peace its ruler be,
And let her happy kingdom stretch
From north to southmost sea.

—*Anna Eichberg.*

LXIII.

Books are our most steadfast friends ; they are our resource in loneliness ; they go with us on our journeys ; they await our return ; they are our best company ; they are a refuge in pain ; they breathe peace upon our troubles ;

they await age as ministers of youth and cheer; they bring the whole world of men and things to our feet; they put us in the centre of the world.—*T. T. Munger.*

LXIV.

The lovers of art are many, but the active intellect, the creative power—the power to put these shapes and images in art, to embody the indefinite, and render perfect—is his alone. He shares the gift with few. He knows not even whence or how this is. He knows only that it is; that God has given him the power which has been denied to others.—*Longfellow on the Artist.*

LXV.

Blessings on thee, little man.
 Barefoot boy with cheek of tan!
 With thy turned-up pantaloons,
 And thy merry whistled tunes;
 With thy red lips redder still
 Kissed by strawberries on the hill;
 With the sunshine on thy face,
 Through thy torn brim's jaunty grace;
 From my heart I wish thee joy,—
 I was once a barefoot boy!

—*Whittier.*

LXVI.

Learn to be good readers, which is, perhaps, a more difficult thing than you imagine. Learn to be discriminative in your reading; to read faithfully and with your best attention, all kinds of things which you have a real interest in—a real, not an imaginary—and which you will find to be really fit for what you are engaged in.—*Thomas Carlyle.*

LXVII.

Efforts to be permanently useful must be uniformly joyous, a spirit all sunshine, graceful from very gladness, beautiful because bright.—*Thomas Carlyle.*

The talent of success is nothing more than doing what you can do well, and doing well whatever you do, without a thought of fame.—*Longfellow.*

LXVIII.

The relief and drainage of North America and South America are similar. Each grand division has a low mountain-system on the eastern and a high mountain-system on the western border. The highest mountains are always nearest the largest ocean. A great central plain extends from north to south. Compare the Mackenzie and Orinoco Rivers, the St. Lawrence and Amazon Rivers, and the Mississippi and Rio de la Plata Rivers.

LXIX.

The American eagle can view the relief and drainage of the United States from the sky. He sees the Atlantic Slope and Plain, Appalachian Mountains, Basin of the Mississippi River, The Plains, Rocky Mountains, Basin Region, Sierra Nevada Mountains, and the Pacific Slope. What a privileged eagle! He is wise, yet he cannot spell as well as a small boy.

LXX.

The Yosemite Valley is a deep gorge with vertical walls 4,000 feet high. During the wet season it abounds in cascades and cataracts, but during the summer many

of the river beds are dry. The Merced River plunges into a cañon, falling 2,600 feet in three leaps. Hundreds of people visit the valley every year and are impressed with the grandeur of its beautiful scenery.

LXXI.

The prairies of the Mississippi basin yield large quantities of grain. The hardy wheat is grown in the north and corn is harvested in abundance in the south. Much of the region is treeless, but not barren. The soil is compact and fertile. Fearful thunder storms sweep over the prairies, and destructive tornadoes damage the crops and villages. In springtime the rivers overflow their banks and leave a deposit of fine, rich soil.

LXXII.

The cotton plant requires the warm season and the plentiful rainfall of the south for its ripening. The seed is surrounded by a fuzzy substance known as the cotton fibre. A superior variety—the sea island cotton—was introduced into the United States from the Bahama Islands. Who invented the cotton gin? Can you tell about raw cotton and cotton-seed oil? The water-power of New England is especially adapted to the cloth-making industry.

LXXIII.

Shell fish are among the valuable food products of the United States. Thousands are given employment in the oyster fisheries of Chesapeake Bay. Oysters attach themselves to various substances,—stones, shells, or drooping branches of trees—hence the saying in Venezuela, “Oysters grow on trees.”

LXXIV.

Let us write and think of the following: clam, lobster, mackerel, salmon, halibut, shad, cod, bluefish, herring, bass. Can you name lake fish?

The Appalachian Highlands is a coal yielding district. Have you heard the remarkable history of the coal-beds—the continued process of centuries? Successive layers of coal have been found buried deep in the earth. Large quantities of soft coal are changed by a certain process to coke. Charcoal is charred wood. It resembles true coal in color, but not in weight. It is lighter and more porous.

LXXV.

Gold and silver are called precious metals because of their scarcity. In ancient times grains and nuggets of gold were washed from the mountain-sides to the gravel-beds below. Troughs, cleats, grooves, quartz, and quick-silver are words that may be remembered in connection with gold mining. Silver is rarely found in a pure state, but is more often combined with other minerals.

LXXVI.

The lofty structure, the lighthouse, throws its friendly beams across the raging sea to warn the sailor of the sunken rocks and treacherous shoals. The ancient Eddy-stone lighthouse was a hoop and lighted candle. The modern lighthouse is a strong electric light, condensed into beams more powerful than a million candles. Such is the progress of science. Enterprise goes hand in hand with knowledge.

LXXVII.

Among the principal iron regions the Lake Superior district ranks first. Its ore is transported by means of lake steamers. Iron is extracted from its ore by means of a process called smelting. Steel is refined iron used in manufacturing articles that must withstand great strain or pressure. We have steel knives, pens, rails and bicycle spokes; iron stoves, pipes, bars and hydrants.

LXXVIII.

The avenue seems alive with cable cars, carriages and pedestrians as we journey on toward *that imposing national structure, the Capitol*. Shall we visit the Senate Chamber and Hall of the House of Representatives? We enter the rotunda and are impressed with the wonderful fresco decorating the canopy over our heads? George Washington selected the site of the city of Washington. Maryland ceded the District of Columbia.

SCIENCE.

LXXIX.

It is hard to number the parts of the flower. The calyx is the outer covering: its separate leaves are called sepals. The corolla is usually made up of a number of petals. The parts of the stamens are the filament and anther. The parts of the pistil are the stigma, style and ovary. Can you tell the use of the pollen?

LXXX.

The native plants of certain countries often find distant homes. Seeds are transported in various ways. The

wind, the birds, and man have all aided in the transportation of plant life. Some seeds are provided with wings. The breezes carry them far above the tree-tops and lodge them among new surroundings. The geographical distribution of plants is governed by the climate and the distance above the sea-level.

LXXXI.

Have you studied the apple blossom and watched the growth of the ovary of the flower? How the wall thickens! It increases its dimensions until the poor little seed is lost in a sphere of ripening fruit. Count the seeds and the partitions. The seeds of many plants furnish food for both man and animals. Barley, wheat, oats and rye are among the cereals cultivated in our own country.

LXXXII.

Air occupies space. Prove this statement. Invert this empty glass and plunge it slowly into a larger vessel nearly full of water. Observe the result. Incline the glass and see the bubbles escape. The escaping bubbles are air which was imprisoned under the glass, although, like the air around us, it is invisible.

LXXXIII.

Air exerts pressure. Apparatus necessary—a hollow glass tube closed at one end and a bowl containing water. Draw air from the tube and insert it in the bowl of water. We are convinced by this simple experiment that pressure of air is very perceptible. Air exerts pressure in all directions—upwards, downwards and sideways. Air weighs upon us as water weighs upon the fish.

LXXXIV.

Air is compressible and elastic. The first experiment illustrates the compressibility of air. Science has made use of the properties of air in the following inventions: compressed-air motors, pneumatic tires, air-cushions, air-brakes, air-pumps, water-pumps, diving-bells, barometers, balloons, parachutes and flying-machines.

LXXXV.

Water exerts pressure in all directions. A floating body displaces water equal to its own weight. Buoyant force of water is shown by the transportation of sticks, seeds, sands and pebbles by the rivers and ocean currents. Springs and artesian wells derive their supplies from higher altitudes. How often we use the lawn-sprinkler, admire the fountain, drink from the city water system and forget the simple law, "Water seeks its own level."

LXXXVI.

A liquid easily changes its position, but the molecules tend to cling together. Moisture attracts moisture. Water will flow more easily over a wet surface. Water shows a tendency to pass through the entire substance of a porous body. Illustrate with a sponge, or a piece of blotting paper. Why do we put stems of flowers in water and expect the blossoms to revive?

LXXXVII.

Solids, liquids and gases expand when heated, contract when cooled. Think of the expansion and contraction of iron rails, the popping of corn and the roasting of chest-

nuts. Iron, lead, gold, silver and other metals may be changed to liquids by the application of heat. When water becomes solid it expands. Why does a crack in a ledge grow wider and longer each year?

LXXXVIII.

The hot sunshine causes water to evaporate and fills the air with moisture. After sunset the grass becomes cool more quickly than the atmosphere. The moisture coming in contact with the cool ground collects in the form of dew. Have you seen dew on a pitcher of ice-water? Why is it there? A cloud of moisture strikes a current of cold air. It is condensed and rain falls. When a teapot of water is heated to the boiling point the confined steam exerts pressure. Watch the cover. It smiles, opens its mouth, and talks to you.

REVIEW LESSONS.

LXXXIX.	XC.	XCI.	XCII.
per form'ing	health	press	in'ward
task	se'cret	strife	king'dom
dil'i gent	hap'pi ness	un shared'	veg'e ta ble
dis turb'	re cess'	un blest'	ob tain'
faith'ful ly	jump	hoard	prod'ucts
ti'dy	shout	wor'thy	ag'ri cul ture
hand'led	tired	com mand'ments	in'ter est ing
torn	wom'en	length	el'e ments
slight	breath	mer'cy	na'ture
dai'ly	fig'ure	truth	mount'ain
yield	di'al	for sake'	val'ley
sor'row	throb	bind	an'gry
brave'ly	no'blest	neck	drought
to-mor'row	ac com'plish	fa'vor	bal'ance
hab'it	de pend'	un der stand'ing	ex tremes'
ei'ther	clothes	to'ward	har'mo ny
speak'ing	re ly'	rath'er	reign
la'zy	sail'or	chos'en	su preme'
char'ac ter	mer'chant	rich'es	im por'tant
bun'dle	pro vide'	hu mil'i ty	di'et
tis'sue	work'ers	hon'or	di'a ry
weave	shun	boast	va'ries
des'ti ny	a mid'	praise	qual'i ty
reap	scene	stran'ger	ac cord'ing
sown	gen'er ous	Bi'ble	old'-fash'ioned

XCIII.

XCIV.

XCV.

XCVI.

churn	sur round'ed	bot'tom	south
re quired'	shell	is'lands	march
ma chine'	won'der ful	sand	due
min'ute	curled	des'ert	ir reg'u lar
pound	breast	mul'ti plied	shape
nour'ish ment	dressed	vis'it ed	pen in'su la
an'cient	be tween'	beach	cape
cul'ti va ted	cast	shore	pro ject'ing
grape	shad'ow	shal'low	coast
dried	edge	reach	prom'on to ry
con vert'ed	cir'cle	sea'weed	joined
rai'sins	prove	creat'ures	nar'row
va ri'e ty	hap'pen	a bound'	isth'mus
cur'rants	o'cean	riv'er	queer
clus'ter	sur'face	lake	mean'ing
weight	whol'ly	fresh	wool'ly
thir'teen	part'ly	on'ly	flat
oun'ces	sep'a rate	spawn	nos'es
Sep tem'ber	con'ti nent	de pos'it	thick
lem'ons	bor'row	dip'per	tea
tru'ly	show'er	point'ers	Ne'gro
eight	pas'sag es	north	Chi nese'
plan'ets	gulf	east	Turks
con tin'u al ly	sound	west	Ar'abs
whirl'ing	strait	left	Lapps

XCVII.	XCVIII.	XCIX.	C.
Finns	ab sorb'	twice	cloud
Es'qui mos	per'ish	hy'dro gen	dew
rein'deer	stead'i ly	col'or less	his'to ry
meat	toiled	o'dor less	ex plained'
watch	brief	bal loon'	mon'ey
growth	be'ing	burn'ing	ves'sel
ger'mi nat ing	with'er	match	twelfth
plant'let	fade	tube	Oc to'ber
cot y le'dons	com posed'	u nite'	re ceived'
fair'y	ox'y gen	ex plo'sion	por'tion
sprin'kle	ni'tro gen	oc cur'	ev'i dence
low'ly	fifth	min'ers	a ware'
drop'ping	at'mos phere	mar'ble	in spired'
moist'ure	lev'el	lime	faith
plu'mule	dense	car'bon	sci'ence
rad'i cle	rare	di ox'ide	im mor'tal
pat'ter	mo'tion	ooze	hail
knock	shak'ing	grot'to	set'tle ment
lore	mill	heav'i er	Au'gust
creep'ing	poi'son	cir'cu late	col'o ny
shoot	sup port'	lungs	trade
flesh'y	com bus'tion	ex hale'	e'vil
rad'ish	pres'ence	un wise'	en'e mies
beet	in'flu ence	fro'zen	fled
car'rot	blaze	liq'uid	re lig'ion

CI.	CII.	CIII.	CIV.
grant'ed	se vere'	syl'van	com'fort a ble
re quest'	es caped'	a pos'tle	a rith'me tic
a mongst'	per'ils	balm	in struct'ing
lan'guage	pur su'ing	em'blem	min'is ter
bea'ver	des'per ate	re-ech'o	town'ship
lodge	un der tak'ing	fain	de cis'ion
swift'ly	pas'sage	ap pease'	ma jor'i ty
rab'bit	ice'-clad	haunts	in hab'it ants
tim'id	wea'ry	mo lest'ed	tread
com'pa nies	scant'i ly	hard'ships	fond'est
trav'el	pro vis'ioned	hemp	sep'ul chre
ex plore'	de pend'ing	raised	slave
voy'age	char'i ty	flax	un chained'
se lect'ed	draught	spin'ning	news'pa per
gov'erned	board	knit'ting	doc'u ment
sev'er al	hos'tile	lad'der	pro test'
suf'fer ing	gi'ant	gar'ret	re fused'
be gin'ning	tossed	realm	stamp
pow'er ful	ex'iles	de scend'	re pealed'
De cem'ber	moored	tem'pest	par'lia ment
brook	broth'er ly	cease	a roused'
stout	hun'dred	be neath'	re frained'
fence	rap'id ly	ri'fles	car'go
tur'key	wharves	at tacked'	har'bor
a bun'dant	guard'ing	sud'den ly	lan'tern

CV.	CVI.	CVII.	CVIII.
flashed	em bod'y	cen'tral	de pos'it
cliffs	in def'i nite	com pare'	cot'ton
scat'ter ing	de nied'	ea'gle	plen'ti ful
swelled	bles'sing	priv'i leged	rain'fall
tri umph'ant	bare'foot	gorge	rip'en ing
thun'der	pan ta loons'	ver'ti cal	fuz'zy
course	whis'tled	cas cades'	sub'stance
nece'ssa ry	straw'ber ries	cat'a racts	fi'bre
dis solve'	jaun'ty	plunge	su pe'ri or
po lit'ic al	dif'fi cult	can'on	in tro duced'
de'cent	im ag'ine	leap	in vent'ed
re spect'	dis crim'i na tive	grand'eur	cot'ton-gin
o pin'ion	at ten'tion	prai'ries	es pe'cial ly
fer'vor	en gaged'	quan'ti ties	a dapt'ed
pre serve'	ef'forts	har'vest ed	in'dus try
stretch	per'ma nent ly	tree'less	shell'-fish
south'most	u'ni form ly	bar'ren	thou'sands
stead'fast	glad'ness	re'gion	em ploy'ment
re source'	tal'ent	com pact'	oys'ter
lone'li ness	suc cess'	fer'tile	fish'er ies
jour'ney	re lief'	sweep	at tach'
ref'u ge	drain'age	de struc'tive	lob'ster
troub'le	sim'i lar	tor na'does	clam
in'tel lect	di vis'ion	dam'age	mack'er el
im'age	sys'tem	crops	salm'on

CIX.	CX.	CXI.	CXII.
cod'fish	min'er al	bi'cy cle	style
shad	com bined'	spoke	wa'ry
blue'fish	struct'ure	hy'drants	pol'len
her'ring	throws	av'e nue	breeze
bass	treach'er ous	ca'ble	ge o graph'ic al
dis'trict	shoals	car'riag es	cli'mate
re mark'a ble	e lec'tric	pe des'tri an	dis tri bu'tion
con tin'ued	con densed'	im pos'ing	sea'-lev el
proc'ess	mod'ern	na'tion al	in crease'
cent'u ries	mil'lion	cap'i tol	di men'sion
suc ces'sive	can'dle	sen'ate	sphere
lay'ers	en'ter prise	rep re sent'a tives	bar'ley
coke	knowl'edge	fres'co	par ti'tion
char'coal	prin'ci pal	dec'o rat ing	ce're al
charred	i'ron	can'o py	oc'cu pies
por'ous	trans port'ed	site	state'ment
re sem'bles	steam'ers	ca'lyx	in vert'
pre'cious	ex tract'ed	se'pals	emp'ty
scar'ci ty	smelt'ing	co rol'la	ob serve'
nug'gets	steel	pet'als	in cline'
grav'el	re fined'	sta'mens	bub'bles
trough	man u fact'ur ing	fil'a ment	in vis'i ble
cleats	ar'ti cle	an'ther	ap pa ra'tus
quick'sil ver	with stand'	pis'til	hol'low
con nec'tion	pres'sure	stig'ma	bowl

CXIII.	CXIV.	CXV.	CXVI.
con vinced'	cur'rents	con'tact	Eng'lish
ex per'i ment	ar te' sian	pitch'er	French
per cep'ti ble	de sire'	strike	Span'ish
di rec'tions	al'ti tudes	con densed'	Dutch
up'ward	sprink'ler	con fined'	Quak'er
down'ward	ad mire'	steam	Pil'grim
side'ways	fount'ain	Ven e zue'la	Hud'son
com pres'si ble	eas'i ly	Lake Su pe' ri or	Mis sis sip'pi
il lus'trates	mol'e cules	Wash'ing ton	St. Law'rence
com pres si bil'i ty	to geth'er	Na'ples	O ri no'co
prop'er ties	tend'en cy	Ham'burg	Mac ken'zie
in ven'tions	sponge	Sar a to'ga	Ap pal a'chi an
mo'tor	blot'ting	Lex'ing ton	Yo sem'i te
pneu mat'ic	blos'soms	Vir gin'i a	Ches'a peake
tires	re vive'	Plym'outh	Pa cif'ic
cush'ions	ex pand'	Phil a del'phi a	At lan'tic
brakes	con tract'	Green'land	Co lum'bus
pumps	ex pan'sion	Ice'land	Ra'leigh
div'ing	pop'ping	Fin'land	E liz'a beth
ba rom'e ters	roast'ing	No'va Sco'ti a	Pat'rick Hen'ry
par'a chutes	chest'nuts	St. Au'gus tine'	Fran'cis Drake
float'ing	met'als	Cal i for'ni a	Del'a ware
dis place'	ap pli ca'tion	Mas sa chu'setts	James'town
buoy'ant	ledge	Ma'ry land	Paul Re vere'
trans por ta'tion	at'mos phere	Spain	James O'tis

SELECTED WORDS.

To be written in sentences by the pupil.

dai'ly	tale	chis'el	cuffs
brain	ber'ry	grat'er	broom
waist	grown	un til'	bed'stead
an'kle	quick	bus'i ly	spool
love'ly	rel'a tive	strain'er	lounge
toes	war	stain	lin'en
knees	shout	col'an der	serve
el'bow	sneeze	hymn	cloak
thumb	latch	cis'tern	bon'net
throat	float	drown	but'tons
eye'brow	bub'ble	weave	fringe
palm	fur'nace	quilt	par'a sol
bait	cent	screen	neck'tie
beg'gar	shov'el	nee'dle	flan'nel
stroke	shav'ings	berth	wool'en
mod'el	hy'drant	lim'it	sin'gle
wife	sieve	thim'ble	tacks
fam'i ly	toast'er	blank'et	peel
muse	boil'er	fowl	jack'et
noise	bar'rel	vas'es	leg'gings
fast'en	wire	has'sock	lay'er
or'phan	oven	earn	er'rand
scale	plane	tum'bler	muff
leak	ham'mer	doi'ly	boil
wed'ding	sauce'pan	mat'tress	pars'nips

beets	par'cel	pas'tor	ca'ble
sal'ad	trav'el er	or'gan ist	har'bor
cloves	cloud'y	so pra'no	pump
quin'ces	bun'dle	ten'or	fir'kin
car'a way	an'vil	bass	cel'lar
puz'zle	ad vice'	al'to	ash'es
wring	al'tar	shield	cin'der
gal'lop	bruise	dag'ger	crack'er
a'pri cots	mal'let	pray'er	pok'er
guide	gim'let	stew'ard	fel'low
cit'ron	glance	steer'age	pul'let
gin'ger	pin'cers	cab'in	put'ty
lane	square	bul'let	el'bow
lem on ade'	don'keys	pat'tern	shoul'der
dough'nuts	pup'pies	pi'lot	a'pron
ven'i son	kit'tens	helm	chis'el
sar dine'	hoof	sur'face	saw
tru'ant	screw'-driv er	rud'der	vise
pro mote'	wrink'le	cap'tain	bench
dis'trict	thrush	bu'gle	forge
veins	pan'ther	con sent'	an'vil
hal'ter	leop'ard	chap'el	stead'y
mur'mur	gi raffe'	sug gest'	wil'ling
pack'age	wreath	shoe'ing	civ'il
chil'ly	ves'try	bea'ver	sim'ple

PART III.

I.

The excellent commercial advantages of Greece are due to the irregularity of her coast line. Greece's ancient orators and philosophers were unrivaled. Her architecture has been studied for centuries. By excavations made in various portions of the country, much has been learned of her ancient cities, temples and statues. The Greek education consisted chiefly in the study of music and physical training.

II.

The isles of Greece ! The isles of Greece !
Where burning Sappho loved and sung,—
Where grew the arts of war and peace,—
Where Delos rose and Phœbus sprung !
Eternal summer gilds them yet,
But all except the sun is set.

—*Lord Byron.*

III.

Land of bards and heroes, hail !
Land of gods and god-like men.
Thine were hearts that could not quail,
Earth was glorious then ;
Thine were souls that dared be free ;
Power, and fame, and liberty.

—*J. G. Percival.*

IV.

Italy is often called the treasure house of Europe. Under the fair Italian skies can be found famous monuments of antiquity. The Colosseum, the Forum and the Pantheon are relics of an ancient city that stood on its seven hills. Rome is situated in a plain through which flows the sluggish, muddy Tiber. St. Peter's at Rome is the largest cathedral in the world. The Vatican is the home of the Pope. An interesting story is told in connection with the erection of the obelisk.

V.

The Roman Empire attained its greatest splendor under the Emperor Augustus. The Empire was bounded by the Euphrates on the east, the Danube and the Rhine on the north, the Atlantic Ocean on the west, and the deserts of Africa on the south. It comprised one hundred different nations, each speaking its own language and worshipping its own gods. It was an age of general peace and prosperity. During this period Jesus Christ was born.

VI.

True greatness, first of all, is a thing of the heart. It is all alive with robust and generous sympathies. It is neither behind its age, nor too far before it. It is up with its age, and ahead of it only just so far as to be able to lead its march. It cannot slumber, for activity is a necessity of its existence. It is no reservoir, but a human fountain.—*Hitchcock.*

VII.

England, Scotland and Wales are included in Great Britain. Ireland, and many of the oceanic islands, are governed by her laws. England has established her colonies in America, Europe, Asia, Africa and Australia. The sun never sets upon the entire English dominion. Sir Walter Scott has written much about the wild and romantic scenery of Scotland. His home, Abbotsford, is near the ruins of Melrose Abbey. Great Britain maintains the largest navy in the world.

VIII.

The early inhabitants of Britain lived in caves. Their tools, made of stone and bronze, are found in mounds with their bones. They were a tall and well-formed race. The Britons were brave and fought chiefly from chariots drawn by horses. Fifty-five years before the birth of Christ, Julius Cæsar visited Britain. A century later the Romans conquered the country. There are to be seen in England many traces of the Romans, in the form of ruined walls, fragments of tiled floors, and roads built of stone.

IX.

About four hundred years after the Roman invasion several Teutonic tribes of Northern Europe entered Britain. A little later came the Saxons. It is supposed that the early Britons were nearly all destroyed. The English language contains many Latin words, but is largely derived from the speech of the Teutonic tribes. During this early period there were many wars in England. When the Danes invaded England in the ninth century, they had to contend with brave warriors.

X.

In the year 1066, Duke William of Normandy brought an army across the English channel to attack England. He was victorious in a battle fought near Hastings. In five years he had completed the conquest. Under King William, England, for the first time, became a united nation. During his reign great cathedral churches were planned and built. His son, William, built the old Westminster Hall in London.

XI.

Hugged in the clinging billow's clasp,
From seaweed fringe to mountain heather,
The British oak with rooted grasp
Her slender handful holds together ;—
With cliffs of white and bowers of green,
And ocean narrowing to caress her,
And hills and threaded streams between,—
Our little mother isle, God bless her !

—*Holmes.*

XII.

Queen Victoria came to the throne in 1837. During her reign the English nation has made rapid progress in wealth and influence. Many reforms have been instituted and the rights and privileges of the common people have been greatly extended. The House of Commons no longer represents the owners of land and the rich alone, but the entire people of the kingdom. The Hon. William E. Gladstone was for many years a leader of the liberal movement.

XIII.

England is a domestic country. Here the home is revered and the hearth sacred. The nation is represented by a family—the Royal family—and if that family is educated with a sense of responsibility and a sentiment of public duty, it is difficult to exaggerate the salutary influence it may exercise over a nation.—*Disraeli*.

XIV.

The English, from the great prevalence of moral habits throughout every class of society, have always been fond of those festivals and holidays which agreeably interrupt the stillness of country life; and they were in former days particularly observant of the religious and social rites of Christmas. It is inspiring to read even the dry details which some antiquarians have given to the quaint humors, the burlesque pageants, the complete abandonment to mirth and good-fellowship, with which this festival was celebrated. It seemed to throw open every door and unlock every heart.—*Washington Irving*.

XV.

She, beloved for a kindliness
Rare in Fable or History,
Queen, and Empress of India,
Crown'd so long with a diadem,
Never worn by a worthier,
Now with prosperous auguries
Comes at last to the bounteous
Crowning year of her Jubilee,

Queen true to womanhood as Queenhood,
Glorying in the glories of her people,
Sorrowing with sorrows of the lowest.

—*Tennyson.*

XVI.

France is a republic. The majority of the inhabitants are Roman Catholics. The latitude of France corresponds to New England, but the climate is milder. Warm winds from the Mediterranean and the Atlantic modify the temperature. An endless variety of articles is manufactured in the leading towns and cities of France. Bayonets were so called from the city of Bayonne, where they were first manufactured.

XVII.

In France are many old and interesting cities. In Rouen one can see the old tower in which Joan of Arc was once a prisoner. Here, also, is an old church that existed in the time of William the Conqueror. Paris, situated on the river Seine, is noted for its art galleries and broad avenues. In the old churches and palaces are to be seen many monuments of the old French monarchy.

XVIII.

Of all the great names of France, that of Napoleon Bonaparte is most noted. His ability as a general was only excelled by his ambition. He vanquished the armies of continental Europe. He inspired fear in the minds of sovereigns. The worst defeat he suffered was on the storm-swept plains of Russia. Here his army was destroyed. At Waterloo he was only defeated,

XIX.

Finally, in place of those innumerable warriors, of their four hundred thousand comrades, who had been so often their partners in victory, and who had dashed onward with so much pride and joy into the territory of Russia, they now saw issuing from these pale and frozen deserts only a thousand infantry and horsemen still under arms, nine cannon, and twenty thousand miserable wretches, covered with rags, with downcast looks, hollow eyes, cadaverous and livid complexions, and long beards matted with frost.
—*Sigur.*

XX.

There was a sound of revelry by night,
And Belgium's capital had gathered then
Her beauty and her chivalry, and bright
The lamps shone o'er fair women and brave men ;
A thousand hearts beat happily ; and when
Music arose with its voluptuous swell,
Soft eyes looked love to eyes which spake again,
And all went merry as a marriage bell.
But hush ! hark ! a deep sound strikes like a rising knell !
—*Byron.*

XXI.

The German Empire is about the size of Texas. Eight millions of the inhabitants are engaged in tilling the soil. They are intelligent, ingenious and thrifty. Every German youth is compelled by law to serve in the army from one to three years. The vineyards of the Rhine are famous. Germany surpasses all other countries in the manufacture of steel. Hundreds of public buildings and

palaces are grouped around the numerous squares of Berlin. Scientific schools, libraries and museums of art make Berlin one of the chief centres of learning.

XXII.

In 1870, at the battle of Sedan, King William I. of Germany defeated Napoleon III. and captured his army. Paris soon surrendered and the German army entered the city. It was soon after this event that the states of Germany were united in the German Empire. Prince Bismarck was influential in bringing about this result. The Emperor Frederick, who lived to reign only a few weeks, was greatly beloved throughout the Fatherland. The banks of the river Rhine are lined with vineyards and the ruins of ancient castles.

XXIII.

The castled crag of Drachenfels
 Frowns o'er the wide and winding Rhine,
 Whose breast of waters broadly swells
 Between the banks which bear the vine ;
 And hills all rich with blossomed trees,
 And fields which promise corn and wine,
 And scattered cities crowning these,
 Whose far white walls along them shine,
 Have strewed a scene, which I should see
 With double joy wert thou with me.

—Byron.

XXIV.

Russia in Europe and Russia in Asia cover a vast territory. Central Russia yields abundant supplies of timber. South of the forests is a succession of vast plains called

steppes. Most of the inland trade is carried on by means of an annual fair at Lower Novgorod, where millions of dollars are exchanged yearly. St. Petersburg, Moscow, Warsaw and Odessa are important centres of trade. Stories of the Siberian exiles have been published in *The Century*.

XXV.

The Russian Empire, when compared with the other great nations of Europe, seems to be far behind in those elements which constitute civilization. Its constitution places little restraint upon the absolute will of the Czar. The people have no voice in legislation. This occasions much dissatisfaction, and men are continually plotting against the existing order. Those suspected of political crimes are punished with the greatest severity.

XXVI.

All eyes are fixed upon the Russian bear, cautiously and steadily prowling toward the south and east. Austria hungrily watches the Balkan provinces, over which the paw of the bear already hovers. Italy, with hate and suspicion, has eyes riveted upon her hereditary enemy, Austria. France, never for a moment forgetting Alsace and Lorraine, watches her opportunity with Germany, and draws into closer affinity with Russia.—*Mary Parmele*.

XXVII.

I have no idea of a liberty unconnected with honesty and justice. Nor do I believe that any good constitutions of government or of freedom can find it necessary for their

security to doom any part of the people to a permanent slavery. Such a constitution of freedom, if such can be, is in effect no more than another name for tyranny of the strongest faction.—*Burke*.

XXVIII.

Asia is the largest and most densely populated continent; the land of the highest mountains and the broadest plateaus; and the home of the oldest and most peculiar nations. Historical traditions point to Asia as the birthplace of man. The fiercest animals and the most precious minerals are found in Asia. Asia possesses a variety of climate. Siberia is the coldest, Arabia the hottest, and India the most humid country in the world.

O'er Arabia's desert sands
The patient camel walks,
Mid lonely caves and rocky lands
The fell hyena stalks.

—*Aikin*.

XXIX.

The Scripture mentions the Garden of Eden as situated in the valleys of the Euphrates and Tigris rivers. Palestine reminds us of the stories of the life and death of Jesus of Nazareth. Centered within and around Asia Minor are numerous sites where figured many incidents in the early history of mankind. The Arabian Desert is the scene of the wanderings of the Israelites under their leader, who was forbidden entrance to the land of Canaan.

XXX.

By Nebo's lonely mountain,
 On this side Jordan's wave,
 In the vale in the land of Moab
 There lies a lonely grave.
 And no man knows that sepulchre
 And no man saw it e'er,
 For the angels of God upturned the sod
 And laid the dead man there.

XXXI.

That was the grandest funeral
 That ever passed on earth ;
 But no man heard the trampling,
 Or saw the train go forth.
 So without sound of music,
 Or voice of them that wept,
 Silently down from the mountain's crown
 The great procession swept.

—*Cecil Frances Alexander.*

XXXII.

Africa is distinguished by its deserts, magnificent rivers, luxuriant vegetation, gigantic animals, and barbarous races. Fierce simoons sweep over the Sahara Desert. Men and animals lie with faces to the ground to avoid suffocation. Camels, freighted with merchandise, journey across the desert. Much of the continent of Africa is unexplored.

Regions immense, unsearchable, unknown ;
 Bask in the splendor of the solar zone,—
 A world of wonders, where creation seems
 No more the work of Nature, but her dreams.

—*James Montgomery.*

XXXIII.

Hail Egypt ! land of ancient pomp and pride,
 Where Beauty walks by hoary Ruin's side ;
 Where plenty reigns, and still the seasons smile,
 And rolls—rich gift of God !—exhaustless Nile.

—*Nicholas Michel.*

Egypt is traversed by the Nile River. Clouds are seldom seen in the lower valley. Among the mountains of Abyssinia the rain comes down in torrents, causing the overflow of the Nile. When the water subsides, a rich sediment covers the soil.

XXXIV.

Mysterious flood—that through the silent sands
 Hast wandered century on century,
 Watering the length of green Egyptian lands,
 Which were not but for thee.

Thou givest blessings as a god might give,
 Whose being is his bounty : from the slime
 Shaken from off thy skirts the nations live,
 Through all the years of Time.

—*Bayard Taylor.*

XXXV.

The ancient Egyptians were highly civilized people. Paintings remain as bright to-day as when executed by the artists. Mummified bodies are found in the catacombs. The sphinx and pyramids are among the world's wonders.

Still through Egypt's desert places
 Flows the lordly Nile,
 From its banks the great stone faces
 Gaze with patient smile ;

Still the Pyramids imperious
Pierce the cloudless skies,
And the Sphinx stares with mysterious,
Solemn, stony eyes.

—*Longfellow.*

XXXVI.

Australia is encircled by mountains of moderate elevation. The interior is diversified with sand wastes, steppe lakes, and salt marshes. A most peculiar animal is the kangaroo. The female carries her young in a kind of pocket called a pouch. There are few pouched animals in existence. In some regions of Australia the climate is delightful.

There is a land where summer skies
Are gleaming with a thousand dyes,
Blending in witching harmonies ;
And grassy knoll and forest height
Are flushing in the rosy light,
And all above is azure bright—
Australia !

XXXVII.

The earth is a sphere, 8,000 miles in diameter, and 25,000 miles in circumference. The sun, moon and stars apparently move from east to west. In reality the earth is constantly rotating on its axis from west to east. The earth's orbit is technically called an ellipse. Accurately computed, the earth completes its annual revolution round the sun in 365 days, 5 hours, 48 minutes, and 50 seconds.

XXXVIII.

The Arctic Circle, Tropic of Cancer, Tropic of Capricorn and Antarctic Circle are parallel to the Equator. Can we comprehend the extent and vastness of a boundless expanse enclosed by imaginary circles thousands of miles in circumference?

While fancy, like the fingers of a clock,
Runs the great circuit and is still at home.

—*Cowper.*

XXXIX.

The zones are, North Frigid Zone, North Temperate Zone, Torrid Zone, South Temperate Zone and South Frigid Zone. Small circles divide the earth into five zones, and meridian circles mark the latitude and longitude of cities inhabited by millions of people.

Sail on, ye stately ships,
And with your floating bridge, the ocean span ;
Be yours to bring man nearer unto man !

—*Longfellow.*

XL.

The organs of circulation are the heart and blood-vessels. The blood-vessels are distinguished as arteries, capillaries and veins. The heart may be called a hollow muscle of four cavities, two auricles and two ventricles. The cavities contain arterial and venous blood. Arteries carry blood from, and veins return blood to, the heart. Capillaries form a medium of communication between veins and arteries. The heart contracts with regularity,

expelling the blood it contains with such force as to produce the shocks easily felt in the arteries near the skin—at the temples and wrists. Physicians feel the pulse to ascertain the action of the heart.

XLI.

The heart—first to live and last to die—is never idle. It is a faithful, diligent servant. The blood, once forced into the aorta, is not permitted to return before accomplishing the duties assigned. Valves may furnish resting-places, the blood's motion must be onward to the journey's end. With work half completed it returns to the heart laden with impurities, only to be pumped away to the lungs, where it exchanges the poisonous gases and returns charged with oxygen, a sustainer of life.

XLII.

The tongue and teeth aid the process of mastication. The active tongue constantly brings food under the teeth to be cut and masticated, then rolls it into position to be swallowed. The food then descends the esophagus to the stomach, a pouch capable of holding between two and three pints. From the stomach food passes through the small and large intestines by means of the contraction of muscular fibres, which force the food in its passage along this tube-like coil.

XLIII.

As the food makes its way through the alimentary canal, certain liquids or juices are furnished by various glands, which dissolve and transform useful portions into

new substances. Saliva, a juice secreted from the salivary glands, converts starch into sugar. Gastric juice oozes from minute glands of the stomach and dissolves in general all animal matter except fat. Secretions from glands of the small intestine and pancreas perform work neglected by the saliva and gastric juice. The liver pours into the small intestine a greenish-yellow bile. The gland also effects important changes in the blood itself.

XLIV.

Quartz is the most common crystal. It can be broken into fragments having a glassy lustre. It strikes fire with steel. On account of its hardness, which resists the action of the elements, it makes up a large part of ordinary cobblestones, pebbles, gravel, sand and even the soil. Some crystals are transparent, others semi-transparent, and still others are opaque. Quartz is often found in uncrystallized form—as flint, agate and chalcedony. The amethyst, jasper and opal are varieties of quartz.

XLV.

By experiment and study, coarse granite is found to contain quartz, felspar and mica. The latter can be readily recognized by its glistening appearance. Granite is an excellent building stone, but its granular texture unfits it for road-making. Granite obelisks in Egypt have stood 3,000 years. Pompey's Pillar and the principal pyramids are composed of granite, yet during the Crimean war it was shown that granite ramparts were as easily demolished as those of limestone.

XLVI.

The numerous rays projecting from the coral polyp are called tentacles. The skeleton is limestone, separated by the tiny laborer from the sea-water continually supplied by the movements of the tentacles. The life of an individual is brief, but a colony endures for ages. One vast host deposits its layer of limestone and passes away. Another and another succeeds, and thus high columns rise through the waves to become the support of coral islands.

“ So the little coral workers,
By their slow and constant motion,
Have made those pretty islands
In the distant, dark-blue ocean.”

XLVII.

The coral groves of the ocean floor are decorated like the gardens of the land, the flower-like polyps answering to our pinks, daisies, violets and lilies. They strew the bottom, which is of the whitest and purest sand ; or hang like leaves and flowers, or cling like mosses and lichens to the branching coral, and lend rare enchantment to the scene. Fishes of many colors, with exquisite grace of movement, dart among the branches.—*Maury*.

XLVIII.

The water is calm and still below,
For the waves and winds are absent there;
And the sands are as bright as the stars that glow
In the motionless fields of upper air.
There, with a light and easy motion,
The fan coral sweeps through the clear, deep sea;

And the yellow and scarlet tufts of ocean
Are bending like corn on the upland lea.
And life in rare and beautiful forms
Is sporting amid those bowers of stone,
And is safe where the wrathful spirit of storms
Has made the top of the wave his own.

—*James Gates Percival.*

XLIX.

Heat is transmitted more readily by certain bodies than by others. Wool and feathers have been provided by nature as the clothing of animals. The heat of an animal is generally greater than that of the surrounding substances, and this heat is not readily conducted through garments of wool, feathers or fur. Water and air are poor conductors of heat. Air is slowly heated, and when once heated, is as slowly cooled. Heat is generally transmitted through liquids and gases by the motion of their molecules.

L.

Certain bodies radiate heat more readily than others; some retain heat, therefore cool slowly. Corrugated stoves, radiators, screens and hot-houses may be mentioned in connection with this principle. The earth receives heat through radiation, and clouds prevent this heat from escaping into space. Clear nights are cold. On cloudy nights less dew appears. Dew and frost are deposited more copiously on some objects than others. This is due to differences in temperature caused by radiation. Cold objects condense and chill the moisture that floats about them.

LI.

Heated air expands; therefore equal volumes of hot and cold air differ in weight. Man's applications—furnace heating and systems of ventilation. Nature's illustration—winds. A volume of hot water is lighter than an equal volume of cold water. Man's application—hot-water system of heating. Nature's illustration—ocean currents. When the surface of a lake becomes cool, condensed particles continually sink and are replaced by warmer particles. After the lake reaches a temperature of 4° above freezing-point, the water, contrary to its usual practice, expands when further cooled. Ice, being decidedly light, floats on the surface.

LII.

The United States is distinguished as being the foremost republic and the most prosperous nation in the world. Its area is about three and a half millions square miles. Its population is representative of all the nations of Europe. To this vast tide of immigration the rapid growth of our country is largely due. It is remarkable how soon foreigners, who come under the influence of our institutions, become Americanized.

LIII.

The President is elected to serve four years. He is commander-in-chief of the army and navy. He has a cabinet of advisers consisting of eight men. These officers administer respectively: the departments of foreign affairs, the treasury, the army, the navy, home affairs, justice, the post-office, and agriculture. The Vice-president presides

over the Senate. The Supreme Court consists of a chief-justice and eight associate justices, appointed by the President.

LIV.

Legislation, or law-making, for the United States is committed to a body called the Congress. It consists of the Senate and the House of Representatives. The Representatives are elected by the people according to the number of people in each state. They serve for a term of two years. Senators, two from each state, are chosen by the legislatures of the several states and serve for a term of six years.

LV.

The pages of history teem with accounts of popular tumults, wherein passion breaks loose and wreaks its fell purpose, misguided and restrained by reason. No definition could be further from describing the colossal event which occurred in Boston on the 16th of December, 1773. Here passion was guided and curbed by sound reason at every step, down to the last moment in the dim candle-light of the old church, when the noble Puritan statesman quietly told his hearers that the moment for using force had at last, and through no fault of theirs, arrived.—*John Fisk.*

LVI.

The causes of the Revolution, so fertile a theme of speculation, are less definite than have been imagined. The whole series of colonial events was a continued and accumulating cause. The spirit was kindled in England ;

it went with Robinson's congregation to Holland; it landed with them at Plymouth; it was the basis of the first constitution of these sage and self-taught legislators; it never left them nor their descendants. It extended to the other colonies, where it met with a kindred impulse, was nourished in every breath, and became rooted in the feelings of the whole people.—*Jared Sparks.*

LVII.

George Washington was rather above the common size; his frame was robust and his constitution vigorous, capable of enduring great fatigue, and requiring a considerable degree of exercise for the preservation of his health. His exterior created in the beholder the idea of strength, united with manly gracefulness. His person and whole deportment exhibited an unaffected and indescribable dignity, unmingled with haughtiness, of which all who approached him were sensible; and the attachment of those who possessed his friendship and enjoyed his intimacy, was ardent, but always respectful.—*John Marshall.*

LVIII.

Happy in the confirmation of our independence and sovereignty, and pleased with the opportunity afforded the United States of becoming a respectable nation, I resign with satisfaction the appointment I accepted with diffidence, a diffidence in my abilities to accomplish so arduous a task, which, however, was superseded by a confidence in the rectitude of our cause, the support of the supreme power of the Union and the patronage of Heaven.—*George Washington.*

LIX.

To Thee, beneath whose eye
 Each circling century
 Obedient rolls,
 Our nation in its prime
 Looked with a faith sublime,
 And trusted in the time
 That tried men's souls.

There, like an angel form
 Sent down to still the storm,
 Stood Washington !
 Clouds broke and rolled away ;
 Foes fled in wild dismay,
 Wreathed were his brows with bay,
 When war was done.

—*John Pierpont.*

LX.

No man has come to true greatness who has not felt in some degree that his life belongs to his race, and that what God gives him he gives him for mankind.—*Phillips Brooks.*

Greatness is a spiritual condition worthy to excite love, interest and admiration; and the outward proof of possessing greatness is that we excite love, interest and admiration.—*Matthew Arnold.*

LXI.

The name of Benjamin Franklin will ever be a precious memory in the hearts of American patriots. He was born in Boston in 1706, and died in 1790. The poverty of his parents forbade his enjoying the advantages of education. By exercising great frugality he managed to

buy a few books which he studied diligently. Being induced by false representations to go to England, he found himself almost penniless in a strange land. By the display of singular industry he soon made friends and a successful living.

LXII.

Franklin made a brilliant business career in Philadelphia. His leisure hours were devoted to science. His discoveries in electricity are world-renowned. He was an unflinching patriot. He helped to draught the Declaration of Independence and was one of its signers. As Ambassador to the court of France, he was revered for his wit, his genius, his dignity, and his charming conversation.

LXIII.

Dost thou love life? Then do not squander time, for that is the stuff life is made of.

Diligence is the mother of good luck, and God gives all things to industry; then plow deep while sluggards sleep, and you shall have corn to sell and to keep.

Little strokes fell great oaks. A little neglect may breed mischief; for want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost.

He that goes a borrowing goes a sorrowing.—*Benjamin Franklin.*

LXIV.

Our constitution is in actual operation; everything appears to promise that it will last; but in this world nothing is certain but death and taxes.

Laziness travels so slowly that Poverty soon overtakes him.

We must all hang together or, assuredly, we shall all hang separately.

Pride that dines on vanity sups on contempt. Pride breakfasted with Plenty, dined with Poverty, and supped with Infamy.—*Franklin*.

LXV.

New England and village life in the 18th century presented a strange contrast to that with which we are familiar. The house of the settler was built of logs, the chinks daubed with clay, and the roof thatched with long grass. In the later and better class of dwellings, the logs were hewn square, so as to need no chinking; or a frame was made of heavy oak timbers, some of them eighteen inches in diameter, and all mortised and braced together in a manner that would be bewildering enough to a carpenter of to-day.

LXVI.

The sides were covered with split-oak clapboards, and the roof with split-cedar shingles, fastened by large, wrought iron nails. The windows consisted of two small lead frames set with a few tiny diamond-shaped panes of glass, and hinged so as to open outward against the house. The doors were of oak plank, doubled and nailed together. They were often hung on wooden hinges and were securely fastened at night by heavy wooden cross bars. In the center of the house rose a stone or brick chimney, about twelve feet square at the base, affording a fireplace large enough for seats to be placed at the side, where the children could sit in the winter evening and look up at the stars.—*Barnes' History*.

LXVII.

On July 4, 1776, John Hancock, president of Congress, signed the Declaration of Independence. There was great rejoicing throughout the thirteen colonies. On Christmas night of the same year, Washington surprised a body of Hessian soldiers at Trenton and captured a thousand prisoners and a large quantity of arms and ammunition. On January 3, 1777, General Washington fiercely attacked Lord Cornwallis at Princeton and gained a decisive victory. General Burgoyne surrendered at Saratoga, October 17, 1777.

LXVIII.

The winter of 1777 and '78 found the American army at Valley Forge in great distress. The apparently wretched condition of the American cause was relieved in the spring by the news that France had acknowledged the independence of the United States, and that a fleet was on its way to render assistance. At the battle of Monmouth, the brilliant courage of Washington rescued the army from disgrace. It was here that the commander-in-chief indignantly rebuked Lee, whose cowardice and disloyalty at length found their appropriate reward.

LXIX.

The most startling, and one of the saddest events of the Revolution was the treason of Arnold and the untimely death of General André. Arnold, having been reprimanded for unworthy conduct, resolved to gratify his desire for revenge and his avarice by turning traitor and delivering West Point into the hands of the British. The gloom which followed this act of treason was soon suc-

ceeded by victories in the South, which gave courage to the American army. The decisive victory at Yorktown practically ended the war.

LXX.

The Americans were drawn up in a line on the right side of the road, and the French occupied the left. At the head of the former, the great American commander, mounted on his noble courser, took his station. At the head of the latter was posted the excellent Count Rochambeau. The French troops, in complete uniform, displayed a martial and noble appearance. The Americans, though not all in uniform, nor their dress so neat, yet exhibited an erect, soldierly air, and every countenance beamed with satisfaction and joy.

LXXI.

When Lafayette was about to return to his native land at the close of the war, he said, in reply to a committee of the American Congress, appointed to present him with a letter addressed to the king, expressive of their high appreciation of the services he had rendered: "May this immense Temple of Freedom ever stand, a lesson to oppressors, an example to the oppressed, a sanctuary for the rights of mankind! And may these happy United States attain that complete splendor and prosperity which will illustrate the blessings of their government, and for ages to come rejoice the departed souls of the founders."—*Levi P. Morton.*

LXXII.

The American Revolution had its origin neither in ambition, nor avarice, nor envy, nor any gross passion; but

in the nature and relation of things, and in the thence-resulting necessity of separation from the parent State. Its progress was limited by that necessity. Our fathers displayed great strength and moderation of purpose. In difficult times they conducted with wisdom; in doubtful times, with firmness; in perilous times, with courage; under oppressive trials, erect; amidst temptations, unseduced; in the dark hour of danger, fearless; in the bright hour of prosperity, faithful.—*Josiah's Quincy.*

LXXIII.

Great were the hearts, and strong the minds
Of those who framed, in high debate,
The immortal league of love, that binds
Our fair, broad Empire, state with state.

And deep the gladness of the hour,
When, as the auspicious task was done,
In solemn trust, the sword of power,
Was given to glory's unspoiled son.

—*W. C. Bryant.*

LXXIV.

The application of steam to carriages was first suggested by Robinson in 1759. Watt patented a locomotive engine in 1794. Stevenson, in 1825, brought a locomotive to such perfection that it attained a speed of twenty-nine miles an hour. The pressure at which steam is used in a locomotive is considerable, but an explosion is a rare occurrence. Several American mechanics have invented locomotive engines for propelling carriages on common roads. Steam engines are now used in various processes of agriculture.

LXXV.

The development of the railroad has tended to revolutionize industry and commerce. The highest engineering skill has applied itself to overcoming difficulties of construction. The cost of making railroads varies according to the number and extent of the tunnels, cuttings and embankments required. In America the railway carriage has reached its highest perfection. The parlor car is equipped with many of those comforts and conveniences found in a luxurious hotel. Is it not possible that Asia and Africa, as well as America and Europe, may one day be covered with a network of railroads?

LXXVI.

The postal service of the United States has enjoyed a remarkable growth and prosperity. It is bewildering to think of the magnitude of the service and the intricacy of the system whereby mails are promptly transported and distributed in the thousands of post offices in the country. Postal clerks become accustomed to handling mail matter with great rapidity and correctness. In spite of defective and illegible addresses, the ratio of errors made is about one to every four thousand pieces handled.

LXXVII.

The Museum of the Dead Letter Office always interests visitors. It is an extraordinary collection of articles which people have tried to send through the mails. Among other curiosities are a hitching post, a loaded revolver, and an Indian scalp. Snakes and small alligators have been

found in the mails. There are boxes of cartridges, percussion caps, firecrackers, torpedoes, false teeth, kitchen utensils, banjos and gold-headed canes.

LXXVIII.

The genius of man has gradually substituted machinery for manual labor. The forces of nature have been subjugated and made to serve the convenience of mankind. Doubtless there are many undiscovered applications of these forces that will, in future years, contribute to our comfort and happiness. Electricity has done much to annihilate time and space. Manifold discoveries in chemistry have powerfully affected the industrial arts.

LXXIX.

In employing all the muscular power at our disposal we are to make the employments we choose as educational as possible. For a wholesome human employment is the first and best method of education, mental as well as bodily. A man taught to plough, row, or steer well, and a woman taught to cook properly, and make a dress neatly, are already educated in many essential moral habits.—*Ruskin.*

LXXX.

Wealth begins in a tight roof that keeps out the rain and the wind; in a good pump that yields you plenty of sweet water; in two suits of clothes, so as to change your dress when you are wet; in dry sticks to burn; in a good double-wick lamp, and three meals; in a horse and locomotive to cross the land; in books to read; and so in giving on all sides, by tools and auxiliaries, the greatest

possible extension to our powers, as if it yielded feet and eyes and blood, length to the day, and knowledge and good-will.—*Emerson*.

LXXXI.

The restless sea is ever troubled by the ceaseless motion of its waters. The waves, the tides, the currents continually disturb it. A movement, like a great pulse, keeps the surface constantly rising and falling. Tides are caused by the attraction of the moon and sun, and occur alternately every six hours. When forced up narrow, shelving bays, deep gulfs, or broad river mouths, where their progress is often retarded, the tidal wave ascends the channel as a perpendicular wall, attaining an enormous height.

LXXXII.

Ocean currents resemble rivers of such magnitude that the mightiest stream of the land is tiny compared to them. A constant interchange of waters between the polar and equatorial regions is affected by the differences of temperature. Cold, ice-bearing currents from the Arctic Ocean give the coast of Maine its singularly cool summers. The Gulf Stream is termed the "heat-carrier." Such immense volumes of heat are conveyed by this benignant stream to northern latitudes, that the winter climate of the whole western face of Europe, as far north as Lapland, is softened and tempered with genial warmth.—*Maury*.

LXXXIII.

Volcanic mountains are generally conical in shape. Materials ejected from a hole in the earth's crust form a circular mound. Successive eruptions occur, and the

mound becomes loftier with each eruption. The vent remains low while the matter ejected is built up about it. Thus the crater assumes a basin-like shape. In the eruption of Vesuvius, A.D. 79, the matter emitted exceeded the entire bulk of the mountain. There is no definite order in which the phenomena of an eruption succeed one another, but they are usually preceded by subterranean rumblings and tremors.

LXXXIV.

After the preliminary rumblings, dense columns and globular masses of watery vapor, mingled with a variety of gaseous substances, issue from the crater. "The spectacle is indescribably expressive at night. The emission of lava in the molten state is the most imposing of volcanic phenomena. After the flow of lava, the explosions become less and less frequent, and at last no evidence of volcanic activity remains, save, perhaps, a vapor-cloud veiling the summit of the mountain."—*Maury*.

LXXXV.

Winds are masses of air in motion. Like ocean currents, they are caused by differences of temperature. Winds may be classified as constant, variable and periodical. The constancy in the direction of certain winds has greatly aided commerce, hence the name "trade-wind." In the zones of the variable winds the polar and equatorial currents are continually striving for mastery. Monsoons are periodical winds, or land and sea breezes on a huge scale. They alternate with summer and winter, not with day and night.

LXXXVI.

My heart is awed within me when I think
Of the great miracles which still go on
In silence around me—the perpetual work
Of thy creation, finished, yet renewed
Forever.

—*Byrant.*

Matter may undergo physical changes and recover its original form. If heated, it may cool; if melted, it may become solid again; if dissolved, it will reappear when the liquid evaporates. Chemical action may totally change substances and give rise to elements, or compounds, in which the original forms can never be directly recognized.

LXXXVII

The smallest particle of matter that can exist independently of other particles is called a molecule.

The particles which compose a molecule are called atoms.

A change in a substance which does not break the molecule is a physical change, and a change in which the molecule is dissolved into its atoms and new molecules formed is a chemical change.—*Edward R. Shaw.*

LXXXVIII.

Ammonia exists in minute quantity in the atmosphere. It is given off by putrefying animal and vegetable substances containing nitrogen. The distillation of bone and animal refuse, for the purpose of making bone-black, yields a large amount of ammoniacal liquor. The destructive distillation of coal in gasworks furnishes the great bulk of ammonium compounds. The solution of

ammonia-gas in water is a reagent continually required as a test in the laboratory and much used in the arts.

LXXXIX.

Chlorine is an element widely distributed in nature. It is a powerful bleaching agent and a common disinfectant. Hydrochloric acid is a compound of chlorine and hydrogen. Its uses are numerous. It is employed in making chloride of lime, in the manufacture of gelatine, and, like ammonia, is useful in the chemical laboratory. The name "Royal Water" was once given to a mixture of hydrochloric and nitric acids, because of its power to dissolve gold, the "king of metals."

XC.

Prepare two test-tubes, one containing ammonia-water and the other sulphuric acid in dilution. Into the former dip a slip of blue litmus paper. Observe, color the same. Into the latter dip a similar slip. Observe, color is red. Replunge it into the first tube, and it resumes its blue color. Acid substances redden the litmus dye, and alkaline substances bring back the blue.

The union of an acid and a base forms a salt.

XCI.

Carbon is an extremely important and a very abundant element. It is an essential constituent of the animal, vegetable and mineral kingdoms. All vegetable life is directly dependent upon the presence of the compound of carbon, which exists in the atmosphere. Diamond, the most precious gem, and the hardest known substance, is pure, or nearly pure, carbon. The beautiful stone, so brilliant, so transparent, is of the same element that enters

the chemical composition of the black, friable coal, sold in cart loads for a comparatively small sum.

XCII.

Graphite, or plumbago, is sometimes improperly called black lead, and is familiarly known as material of the common lead-pencil. Amorphous graphite is so soft and unctuous that it is often applied as a lubricator for heavy machinery. At ordinary temperature graphite undergoes no change, therefore it is used for covering iron articles, to prevent their rusting. Its greasy, adhesive qualities render it capable of varnishing iron with a thin, lustrous layer. Common stove-polishes are composed of powdered graphite.

XCIII.

Charcoal is obtained from wood, burned in a certain smothered manner. It is one of the most durable substances. Specimens have been found at Pompeii and upon Egyptian mummies. Charcoal is a disinfecting agent. Its great merit as a disinfectant is that it constantly draws into destruction the offensive matters around it. If placed about the wards of a hospital it removes the unpleasant odors. Charcoal exhibits different degrees of decolorizing power.

Bone-black is of use to sugar-refiners.

Lampblack is important as a pigment, and is the chief ingredient of printers' ink.

XCIV.

“Tell me, lump of carbon,
 Burning lurid in the open grate,
While thy flames rise twisting, turning,
 Ages past elucidate.”

When coal is sufficiently heated a gas is set at liberty, and along with it many other things. It is marvelous what can be extracted from coal—rich colors, delicate perfumes, nearly a hundred useful substances, and among them flavors for sweetmeats. Coal is not pure carbon, and that which remains after coal has been heated, coke, is contaminated with inorganic matters originally present in the coal.

XCV.

Science has lengthened life; it has mitigated pain, has extinguished diseases, has increased the fertility of the soil, given new security to the mariner, furnished new arms to the warrior, spanned great rivers and estuaries with bridges of form unknown to our fathers; it has guided the thunderbolt innocuously from heaven to earth; it has lighted up the night with splendor of the day; it has extended the range of human vision; it has multiplied the power of the human muscles.—*Macaulay.*

XCVI.

Science has accelerated motion; it has annihilated distance; it has facilitated intercourse, correspondence, all friendly offices, all despatch of business; it has enabled man to descend to the depths of the sea, to soar into the air, to penetrate securely into the noxious recesses of the earth; to traverse the land in cars which whirl along without horses; to cross the ocean in ships which run many knots an hour against the wind. These are but a part of its fruits, for it is a philosophy which never rests, which is never perfect. Its law is progress.—*Macaulay.*

REVIEW LESSONS.

XCVII.

ex'cel lent
 com mer'cial
 ad vant'a ges
 ir reg u lar'i ty
 an'cient
 or'a tors
 phil os'o phers
 un ri'valed
 ar'chi tect ure
 cent'u ries
 ex ca va'tion
 va'ri ous
 por'tions
 stat'ues
 ed u ca'tion
 con sist'ed
 chief'ly
 phys'i cal
 isles
 e ter'nal
 quail
 lib'er ty
 treas'ure
 fa'mous
 es tab'lished

XCVIII.

mon'u ments
 an tiq'ui ty
 rel'ics
 sit'u a ted
 slug'gish
 ca the'dral
 con nec'tion
 e rec'tion
 ob'e lisk
 at tained'
 com prised'
 lan'guage
 wor'ship ing
 pros per'i ty
 pe'ri od
 ro bust'
 sym'pa thies
 slum'ber
 ac tiv'i ty
 ex is'tence
 res er voir'
 fount'ain
 in clud'ed
 o ce an'ic
 en tire'

XCIX.

do min'ion
 ro man'tic
 scen'er y
 main tain'
 bronze
 char'i ots
 con'quered
 frag'ments
 in va'sion
 de stroyed'
 de rived'
 war'riors
 vic to'ri ous
 com plet'ed
 con'quest
 bil'lows
 sea'weed
 heath'er
 bow'ers
 ca ress'
 re form'
 in'sti tut ed
 priv'i leg es
 ex tend'ed
 rep re sents'

C.

lib'er al
 move'ment
 do mes'tic
 re vered'
 sa'cred
 re spon si bil'i ty
 sen'ti ment
 dif'fi cult
 ex ag'ger ate
 sal'u ta ry
 prev'a lence
 ru'ral
 so ci'e ty
 fes'ti vals
 hol'i days
 a gree'a bly
 in ter rupt'
 par tic'u lar ly
 ob ser vant
 re lig'ious
 in spir'ing
 de tail'
 an ti qua'ri ans
 quaint
 hu'mor ous

CI.	CII.	CIII.	CIV.
bur lesque'	ar'ti cles	cap'tured	dis eas'es
pag'eants	man u fact'ured	wretch'es	fath'er land
a ban'don ment	bay'o nets	ca dav'er ous,	prom'ise
mirth	pris'on er	liv'id	strewed
fel'low ship	con'quer or	com plex'ions	doub'led
cel'e brate	sit'u a ted	rev'el ry	cen'tral
kind'li ness	gal'ler ies	cap'i tal	a bun'dant
his'to ry	pal'a ces	chiv'al ry	sup plies'
em'press	mon'arch y	hap'pi ly	tim'ber
queen	a bil'i ty	vo lup'tu ous	suc ces'sion
di'a dem	ex celled'	mar'riage	ex chan'ges
worth'i er	am bi'tion	knell	ex'iles
pros'per ous	van'quished	mil'li ^o ns	pub'lished
au'gu ries	con ti nen'tal	en gaged'	com pared'
boun'te ous	sov'er eigns	in tel'li gent	el'e ments
ju'bi lee	de feat'ed	in gen'ious	civ il i za'tion
re pub'lic	fi'nal ly	thrift'y	re straint'
ma jor'i ty	in nu'mer a ble	com pelled'	ab'so lute
in hab'i tants	part'ners	vine'yards	czar
lat'i tude	vic'to ries	sur pass'es	leg is la'tion
cor res pond'	ter'ri to ry	grouped	oc ca'sion
cli'mate	is'su ing	sci en tific	dis sat is fac'tion
mod'i fy	in'fant ry	li'bra ries	con tin'u al ly
tem'per a ture	can'non	mu se'ums	sus pect'ed
va,ri'e ty	mis'er a ble	sur ren'dered	po lit'ic al

CV.	CVI.	CVII.	CVIII.
pun'ished	hu'mid	un search'a ble	pock'et
se ver'i ty	cam'el	un known'	pouch
cau'tious ly	hy e'na	so'lar	gleam'ing
stealth'i ly	script'ure	cre a'tion	blend'ing
prowl'ing	men'tion	hoa'ry	witch'ing
hun'gri ly	in'ci dent	ex haust'less	har'mo nies
sus pi'cion	wan'der ings	trav'ersed	height
riv'et ed	en'trance	sub sides'	az'ure
he red'i ta ry	sep'ul chre	sed'i ment	sphere
af fin'i ty	fu'ner al	mys te'ri ous	di am'e ter
jus'tice	tram'pling	ex'e cut ed	cir cum'fer ence
be lieve'	pro ces'sion	art'ist	ap par'ent ly
free'dom	dis tin'guished	mum'mi fied	re al'i ty
se cu'ri ty	mag nif'i cent	cat'a combs	con'stant ly
per'ma nent	lux u'ri ant	sphinx	ro'ta ting
tyr'an ny	veg e ta'tion	pyr'a mids	orb'it
fac'tion	gi gan'tic	im pe'ri ous	tech'nic al ly
slav'er y	bar'ba rous	sol'emn	el lipse'
pop'u lat ed	si moon'	mod'er ate	ac'cu rate ly
pla teaus'	a void'	el e va'tions	com put'ed
pe cul'iar	suf fo ca'tion	in te'ri or	par'al lel
his tor'ic al	freight'ed	di ver'si fied	e qua'tor
tra di'tions	mer'chan dise	kan ga roo'	com pre hend'
fierc'est	un ex plored'	fe'male	vast'ness
pre'cious	im mense'	ex panse'	im ag'i na ry

CIX.	CX.	CXI.	CXII.
cir'cuit	wrists	mus'cu lar	trans par'ent
frig'id	phy si'cian	al i men'ta ry	o paque'
tem'per ate	pulse	ca nal'	crys'tal lize
tor'rid	as cer tain'	liq'uids	flint
di vide'	faith'ful	juic'es	ag'ate
me rid'i an	ser'vant	glands	chal ced'o ny
lon'gi tude	a or'ta	dis solve'	am'e thyst
or'gans	per mit'ted	sa li'va	jas'per
cir cu la'tion	du'ties	sal'i va ry	o'pal
heart	valves	con vert'	ex per'i ment
blood'-ves sels	fur'nish	starch	coarse
hol'low	jour'neys	gas'tric	read'i ly
ar'ter ies	im pu'ri ties	ex cept'	rec'og nize
cap'il la ries	poi'son ous	se cre'tions	glis'ten ing
mus'cle	sus tain'er	pan'cre as	ap pear'ance
cav'i ties	tongue	neg lect'ed	gran'u lar
ar te'ri al	teeth	liv'er	text'ure
ve'nous	mas ti ca'tion	bile	prin'ci pal
me'di um	po si'tion	ef fect'	ram'part
com mu ni ca'tions	swal'low	frag'ments	de mol'ished
con tract'	de scend'	lus'tre	limes'tone
reg u lar'i ty	œ soph'a gus	re sist'	pro ject'ing
ex pel'ling	stom'ach	or'di na ry	pol'yp
pro duce'	ca'pa ble	cob'ble stones	ten'ta cles
shock	in tes'tines	grav'el	skel'e ton

CXIII.	CXIV.	CXV.	CXVI.
in di vid' u al	screens	com mand'er	mis guid'ed
en dures'	prin'ci ple	ar'my	rea'son
col'umn	re ceived'	na'vy	def i ni'tion
is'land	co'pi ous ly	cab'i net	de scrib'ing
mo'tion	vol'umes	ad vis'ors	co los'sal
groves	weight	con sist'ing	curbed
dec'o rat ed	ap pli ca'tion	ad min'is ter	qui'et ly
mos'ses	sys'tem	re spect'ive ly	fer'tile
li'chens	ven ti la'tion	de part'ment	spec u la'tion
en chant'ment	il lus tra'tion	af fairs'	se'ries
ex'qui site	cur'rent	treas'ur y	co lo'ni al
yel'low	par'ti cles	ag'ri cult ure	ac cu'mu lat ed
scar'let	con'tra ry	vice-pres'i dent	kin'dled
wrath'ful	us'u al	pre side'	con gre ga'tion
spir'it	prac'tice	sen'ate	ba'sis
trans mit'ted	de cid'ed ly	as so'ci ate	de scend'ant
feath'ers	a're a	com mit'ted	im'pulse
gen'er al ly	pop u la'tion	con'gress	nour'ished
con duct'ed	rep re sent'a tive	e lect'ed	root'ed
gar'ments	im mi gra'tion	sen'a tors	vig'or ous
re main'	rap'id	pop'u lar	fa tigue'
mol'e cules	re mark'a ble	tu'mult	con sid'er a ble
re tain'	in sti tu'tions	pas'sion	ex'er cise
cor'ru gat ed	A mer'i can ized	wreaks	pres er va'tion
ra'di a tors	pres'i dent	pur'pose	grace'ful ness

CXVII.	CXVIII.	CXIX.	CXX.
de port'ment	fru gal'i ty	op er a'tion	shin'gle
ex hib'it ed	pen'ni less	la'zi ness	wrought-i'ron
un af fect'ed	sin'gu lar	trav'els	di'a mond
in de scrib'a ble	bril'liant	av'a rice	pause
dig'ni ty	bus'i ness	as sur'ed ly	hinged
haugh'ti ness	ca reer'	van'i ty	est'u a ries
ap proach'	leis'ure	con tempt'	se cure'ly
sen'si ble	de vot'ed	supped	fas'tened
in'ti ma cy .	e lec tric'i ty	in'fa my	chim'ney
ar'dent	re nowned'	con'trast	af ford'ing
re spect'ful	un flinch'ing	fa mil'iar	quan'ti ty
con fir ma'tion	dec la ra'tion	chinks	am mu ni'tion
op por tu'ni ty	in de pend'ence	daubed	de cis'ion
ap point'ment	pen'e trate	thatched	dis tress'
dif'fi dence	am bas'sa dor	dwel'lings	re lieved'
su per sed'ed	ge'nius	frame	as sist'ance
rec'ti tude	charm'ing	eight een'	res'cued
pat'ron age	con ver sa'tion	mor'tised	re buked'
o be'di ent	squan'der	braced	cow'ard ice
sub lime'	slug'gards	be wil'der ing	dis loy'al ty
spir'it u al	nox'ious	e nough'	ap pro'pri ate ly
out'ward	mis'chief	car'pen ter	start'ling
pa'tri ot	bor'row ing	clap'board	trea'son
pov'er ty	sor'row ing	split-oak'	mul'ti plied
for bade'	act'u al	split-ce'dar	un time'ly

CXXI.	CXXII.	CXXIII.	CXXIV.
rep'ri mand ed	pro pel'ling	sub'sti tut ed	e ject'ed
grat'i fy	de vel'op ment	ma chin'er y	e rup'tions
traï'tor	rev o lu'tion ize	sub'ju gat ed	as sume'
de cis'ive	com'merce	con trib'ute	e mit'ted -
cours'er	en gin eer'ing	an ni'hi late	phe nom'e na
mar'tial	con struc'tion	chem'is try	sub ter ra'ne an
sol'dier ly	em bank'ments	in dus'tri al	rum'blings
coun'te nance	e quipped'	em ploy'ment	tre'mor
com mit'tee	con ven'ience	prop'er ly	pre lim'i na ry
ap pre ci a'tion	mag'ni tude	es sen'tial	glob'u lar
op pres'sors	in'tri ca cy	aux il'ia ries	gas'e ous
sanct'u a ry	dis trib'ut ed	cease'less	spec'ta cle
il lus'trate	cor rect'ness	al ter'nate ly	e mis'sion
re la'tion	de fect'ive	shelv'ing	fre'quent
per'il ous	il leg'i ble	re tard'ed	ev'i dence
phil os'o phy	ex traor'di na ry	per pen dic'u lar	clas'si fied
im mor'tal	col lec'tion	e nor'mous	pe ri od'i cal
league	cu ri os'i ties	re sem'ble	qual'i ty
aus pi'cious	re volv'er	in ter changed'	va'ri a ble
lo co mo'tive	al'li ga tors	e qua to'ri al	mon soon's'
en'gine	car'tridg es	sin'gu lar ly	mir'a cle
per fec'tion	per cus'sion	be nig'nant	per pet'u al
pres'sure	tor pe'does	vol can'ic	e vap'o rate
ex plo'sion	u ten'sils	con'i cal	chem'i cal
me chan'ics	grad'u al ly	ma te'ri al	to'tal ly

CXXV.	CXXVI.	CXXVII.	CXXVIII.
am mo'ni a	fri'a ble	Eu'rope	Fred'er ick
pu'tre fy ing	graph'ite	Col os se'um	Drach'en fels
dis til la'tion	plum ba'go	Fo'rum	steppes
am mo ni'ac al	a mor'phous	Pan'the on	Nov'go rod
de struc'tive	unc'tion	Ti'gris	St. Pe'ters burg
so lu'tion	lu'bri ca tor	Vat'i can	Mos'cow
re a'gent	ad he'sive	Eu phra'tes	War'saw
lab'o ra to ry	var'nish ing	Je'sus Christ	O des'sa
chlo'rine	ac cel'er ate	Great Brit'ain	Si be'ri a
bleach'ing	du'ra ble	Ire'land	Bal kan'
dis in fec'tion	spec'i mens	Ab'bots ford	Al sace'
hy dro chlo'ric	of fen'sive	Mel'rose Ab'bey	Lor raine'
chlo'ride	hos'pi tal	Ju'lius Cæ'sar	Ti'ber
gel'a tine	de col'or i zing	Teu ton'ic	Pal'es tine
mixt'ure	pig'ment	West'min ster	Naz'a reth
ni'tric	in gre'di ent	Cath'o lic	Is'ra el ites
sul phu'ric	e lu'ci date	Med i ter ra'ne an	Ca'naan
di lu'tion	suf fi'cient ly	Ba yonne'	Jor'dan
lit'mus	mar'vel ous	Rou'en	Sa ha'ra
sim'i lar	del'i cate	Joan' of Arc'	E'gypt
fa cil'i tate	con tam'i nat ed	Seine	Cap'ri corn
re sume'	in or gan'ic	Na po'le on	Pom'pey
al'ka line	in noc'u ous ly	Wa ter loo'	Cri me'an
con stit'u ent	mit'i gat ed	Bel'gium	Bur goyne'
com po si'tion	ex tin'guished	Bis'marck	Sar a to'ga

SELECTED WORDS.

To be used in sentences by the pupil.

CXXIX.	CXXX.	CXXXI.	CXXXII.
be seech'	flo'rist	por'ti co	bal'lot
in'di go	ed'i tor	pi az'za	cu'po la
coop'er	sher'iff	ve ran'da	tur'ret
ar'ti san	sur'geon	schoon'er	pier
bar'ber	mil'li ner	bal'co ny	fore'cas tle
cash ier'	mu si'cian	yacht	can'di date
at tor'ney	seam'stress	al'ley	mi nor'i ty
ca'ter er	mag'is trate	awn'ing	bam boo'
lav'en der	satch'el	del'e gate	fo'li age
ar'chi tect	gourd	re pub'li can	cup'board
car'pen ter	slaught'er	re ceipt'	lau'rel
al'der man	laun'dress	in'voice	cus'tom ers
non'sense	plumb'er	e lec'tion	nu mer a'tion
trough	tai'lor	nom i na'tion	div'i dend
sec'ond a ry	sec're ta ry	nurs'er y	sub trac'tion
ac count'ant	con'sta ble	con serv'a tive	quo'tient
burg'lar	ped'dler	rev'e nue	min'u end
auc tion eer'	treas'ur er	an'chor	frac'tion
con fec'tion er	preach'er	buoy	freak
a poth'e ca ry	gov'ern or	ceil'ing	lect'ure
di'a ry	fin an cier'	res o lu'tion	mod'ern
be siege'	ma rine'	li'cense	heif'er
drow'sy	dem'o crat	mort'gage	doe
may'or	ledg'er	cau'cus	sub'tra hend
drug'gist	sub'urbs	seal'ing	dec'i mal

CXXXIII.	CXXXIV.	CXXXV.	CXXXVI.
groove	en deav'or	syl'la ble	sal'ad
dough	pig'eon	bis'cuit	der'rick
ar'se nic	re lease'	sau'sage	cor'po ral
con crete'	buf'fa lo	ging'ham	ar til'ler y
nu'mer a tor	fu'ri ous	colo'nel	com'mis sar y
sau'ci ly	poul'try	yeast	sieve
hound	awk'ward	re hearse'	om'e let
strych'nine	des'pot ism	griev'ance	tas'sel
ab stract'	pur suit'	mus tache'	gru'el
de nom'i na tor	ap par'el	crit'i cise	am'bu lance
salve	lunch'eon	por'ridge	chasm
span'iel	re cruit'	lieu ten'ant	dis guise'
mul ti pli cand'	her'o ine	cav'al ry	rogue
dis'count	fab'ric	al pac'a	plague
trea'ty	gai'ters	cal'i co	au'to graph
ter'ri er	sten'cil	rib'bon	hand'ker chief
por'ce lain	gen'u ine	jeal'ous	pas'try
no ta'tions	for'tress	ad' ver tise'	trou'sers
per cent'age	cha rade'	cam'bric	skim
coch'i Neal	pic'nic	muf'fin	for'ci ble
mo las'ses	le'gion	ser'geant	um brel'la
par'tridge	brig a dier'	in'fant ry	com'pli ment
mead'ows	dra goon'	knap'sack	tough
par'rot	ar'se nal	cay enne'	bru nette'
os'trich	tab leau'	gos'sa mer	slip'per y

CXXXVII.	CXXXVIII.	CXXXIX.	CXL.
chron'i cle	prej'u dice	un fath'omed	pit'e ous
to ma'to	mu'ci lage	grate	a tone'
bag'gage	scis'sors	in gen u'i ty	man'u script
cu'cum ber	mon'o gram	hoard	im me'di ate
bal'lad	scythe	kiln	bri'dal
cat'a logue	vil'lain	quay	du'el
tour'ist	trel'lis	con jec'ture	sta'tion a ry
on'ion	ac quaint'	fri'ar	pi'e ty
car'rot	choir	loi'ter	i'ci cle
let'tuce	aisle	gau'dy	spec ta'tor
bal'ance	med'ley	ten'nis	ghast'ly
con vince'	ves'tige	ad'jec tive	scourge
av'a lanche	coun'ter feit	mul'ti pli er	wail'ing
junc'tion	tor'toise	mas'cu line	mel'an chol y
cab'bage	san'guine	fem'i nine	les'sen
per suade'	pref'ace	neu'ter	med'dle
cel'er y	au'burn	fe lic'i ty	arch'es
chal'lenge	nui'sance	phrase	fer'vent
ad journ'	di'a logue	can cel la'tion	va'cant
dun'geon	belle	sole	con ceit'
triv'i al	heir	de fi'cien cy	min'strel
swol'len	clause	min'i a ture	ham'mock
dis patch'	faint	veil	feign
cac'tus	an'them	numb	suit'or
ca'ble	curfew	di vis'i ble	a part'ment

CXLI.	CXLII.	CXLIII.	CXLIV.
ges'ture	sculp'ture	mis cel la'ne ous	com par'i son
lin'i ment	me'te or	con ta'gious	re lapse'
proph'e sy	bach'e lor	prom'i nence	change'a ble
prec'e dent	fres'co	ail'ment	ma la'ri a
par ti'tion	be hav'ior	ri dic'u lous	ex cus'a ble
trait	ad'mi ra ble	se'ri al	zeal'ous
an'gle	au'di ence	mon'ster	found'ry
leath'er	gor'geous	re mit'tance	sim plic'i ty
pe ti'tion	por'trait	prep o si'tion	o mis'sion
in'cense	en'vi ous	de clen'sion	the'a tre
o'a sis	vi'cious	in sure'	ware'house
crim'i nal	vex a'tion	spasm	bul'le tin
gey'ser	ve'hi cle	com'i cal	im'be cile
post'script	a'gen cy	sub'ject	ag'o ny
smug'gle	ven'geance	pred'i cate	mosque
sur vey'or	om'ni bus	im per'a tive	bre'ri ty
mos qui'to	ma li'cious	in fin'i tive	fac'to ry
em bez'zle	re gat'ta	po ten'tial	as sign'ment
as sault'	har'ass	in dic'a tive	syn'a gogue
guilt'y	rem i nis'cence	sub junc'tive	dor'mi to ry
nav'i ga ble	fren'zy	con ju ga'tion	el'e va tor
in del'i ble	a'mi a ble	per fec'tion	in i'tial
ver'dure	right'eous	ob jec'tive	pis'ton
duch'ess	u'ti lize	pos sess'ive	con sum ma'tion
ac'cu rate	per cep'tion	nom'i na tive	in ten'si fy

PART IV.

I.

Plants and animals are mutually dependent upon each other. All forms of animal life absorb the oxygen from the air which they inhale. The carbonic acid gas which is exhaled, while actually poisonous to animals, is an ingredient absolutely required to sustain the life of plants. On the other hand, while the plant is digesting this food it is supplying the oxygen needed to secure the healthfulness of the atmosphere. The wisdom of the Creator is further shown in the fact that winds help to preserve harmony between the plant and animal kingdoms by bearing away the excess of gases to places where it is needed.

II.

Every species of plant and animal life has its own geographical range. This range is determined by temperature, elevation and moisture. When plants or animals are carried from one climate to another, so that a distinct change is effected in their environment, they are liable either to die or to undergo important modifications. Many of our most valuable food plants have been thus transformed. It is said that the Shetland pony and the race horse came from one original stock.

III.

Animal life is dependent upon the food spontaneously provided by nature. Hence, it may be said that the fauna of a country is dependent on its flora. The differences between the animals of the frigid zone and those of the torrid zone are as significant as those which characterize the plants of corresponding latitudes. The physical organization of the animal becomes peculiarly adapted to its environment. To trace the adaptability of various animals to the environment or habitat in which they live, constitutes one of the most instructive lessons in natural history.

IV.

A few examples of the correspondence existing between animals and their surroundings are here quoted. "The reindeer is fitted to browse upon Arctic mosses, and has the instinct of searching for them beneath the snow. The cushioned foot of the camel enables him to tread firmly upon the shifting sand of the desert, while his capacity for carrying an extra supply of water adapts him wonderfully for journeying through its dry and thirsty wilds. The llama was the only beast of burden employed by the native Americans in scaling the snowy heights of the Andes."

V.

All things in the natural world symbolize God, yet none of them speak of Him but in broken and imperfect words.
—*H. W. Beecher.*

Nature and truth are one, and immutable and inseparable as beauty and love.—*Mrs. Jamison.*

Nature is a revelation of God; art is a revelation of man.—*Longfellow.*

Laws of nature are God's thoughts, thinking themselves out of the orbits and tides.—*C. H. Parkhurst.*

There is a majesty and mystery in nature, take her as you will.

The essence of poetry comes breathing to a mind that feels, from every province of her empire.—*Thomas Carlyle.*

VI.

The effect of climate upon man is not so marked as upon animals. However, in respect to bodily and intellectual characteristics there are appreciable differences. Unlike the animal, he can protect himself from the severity of the Arctic winter, and from the fierceness of tropical heat. Nevertheless, climate reacts upon him in such a way as to determine his mental and moral peculiarities, industrial habits, social and governmental institutions. To the Caucasian race, by reason of its physical and mental superiority, has been assigned the task of civilizing and enlightening the world.

VII.

The effect of climate upon the character of individuals and of communities is known to be very important. The mind, in its present condition of existence, is dependent for its healthy and vigorous manifestations upon the degree of energy and elasticity with which the physical organs fulfill their functions. The inhabitants of the polar and equatorial regions are subjected to the paralyzing and debilitating influences of the extremes of cold and heat; and, ac-

cordingly, we find their intellectual and moral faculties scarcely susceptible of any considerable development.

In proportion to the salubrity and genial temperament of the climate, the mind in all its powers becomes capable of expanding to a loftier and more substantial flight.—*Randall.*

VIII.

Physical geography exerts an important influence upon the distribution of human labor. It is, therefore, no accident that some people are engaged in fishing, some in mining, and some in agriculture. Our own country furnishes striking illustrations of this law. The valley of the Mississippi is a succession of climatic belts, in which are cultivated those crops that are adapted to the several conditions of soil and climate. Sugar and rice cannot be grown in Minnesota, neither do corn and wheat flourish in Louisiana. In one section we find the country adapted to stock-raising, dairying and wool-growing; in another to mining and manufacturing.

IX.

As commerce is the distribution of the products of human industry, it also is largely influenced by physical causes. Great commercial cities of the world have been situated upon the seacoast, adjacent to convenient harbors. Such were Venice, Genoa, Constantinople and Antwerp. The ocean has ever been the world's great highway. In recent times new causes have operated to promote industry and commerce. The discovery of gold in California and Australia, the application of steam power to naviga-

tion and overland transportation, and the invention of the telegraph have revolutionized the commerce and industries of the world.

X.

God has connected the labor which is essential to bodily sustenance with the pleasures which are healthiest for the heart; and while he made the ground stubborn, he made its herbage fragrant, and its blossoms fair.—*Ruskin*.

Commerce changes the fate and genius of nations, by communicating arts and opinions, circulating money, and introducing materials of luxury: she first opens and polishes the mind, then corrupts and enervates both that and the body.—*Thomas Gray*.

XI.

Let us never forget that the cultivation of the earth is the most important labor of man. Man may be civilized in some degree without great progress in manufactures, and with little commerce with his distant neighbors. But without the cultivation of the earth, he is, in all countries, a savage. Until he gives up the chase, and fixes himself in some place, and seeks a living from the earth, he is a roaming barbarian. When tillage begins, other arts follow. The farmers, therefore, are the founders of civilization.—*Daniel Webster*.

XII.

The brilliant financial policy of Alexander Hamilton gave added lustre to the administration of Washington. The proposition that all the debts of the Continental Congress, as well as those of the separate states, should be

assumed by the federal government was most far-sighted and sagacious. All merchants and capitalists who were creditors of the states warmly supported Hamilton in securing the adoption of this measure. In order to provide sufficient revenue for the payment of these debts, a moderate tariff was placed upon imported goods. An incidental result of this tariff was the growth of manufacturing interests.

XIII.

In 1800, the seat of the federal government was established at Washington. In 1801, Thomas Jefferson was inaugurated President in the new city. This is one of the few instances wherein a recognized leader has been elevated to the Presidency. Jefferson devised our decimal currency, wrote the Declaration of Independence, and declared against the extension of slavery. He was the founder of the University of Virginia. The purchase of the Louisiana Territory, accomplished during his administration, was a dazzling stroke of genius. For fifteen millions of dollars territory was added to our domain, out of which have been formed no less than fourteen states and territories.

XIV.

We should cherish the idea that while the states have their rights, sacred and inviolable, which we should guard with untiring vigilance, never permitting an encroachment upon them, and ever remembering that such encroachment is as much a violation of the Constitution of the United States as to encroach upon the rights of the general government; still bear in mind that the states are

but subordinate parts of one great nation, that the nation is over all, even as God is over the universe.—*Oliver P. Morton.*

XV.

There is a great difference between nationality and race. Nationality is the miracle of political independence. Race is the principle of physical analogy.—*Disraeli.*

A people that studies its own past and rejoices in the nation's proud memories is likely to be a patriotic people, the bulwark of law and the courageous champion of right in the hour of need.—*Joseph Anderson.*

XVI.

The invention of the cotton gin, a machine for separating the cotton fibre from the seed, by Eli Whitney, in 1793, greatly increased the demand for cheap labor in the South. Thus the institution of negro slavery became a bulwark of prosperity in the Southern States. By the famous compromise of 1820, Missouri was admitted to the Union as a slave state; but slavery was forever prohibited north of the parallel of 36° 30'. Party strife raged fiercely while this question was pending, and much sectional feeling was aroused.

XVII.

The principal events of Jackson's administration were the introduction of the "Spoils System" and the discussion in Congress upon the doctrine of nullification. Daniel Webster attained the summit of his fame as an orator

in a speech in reply to Senator Hayne of South Carolina, opposing this doctrine. In 1832, Jackson vetoed the bill for the recharter of the United States Bank. The removal of the public money from this bank and its distribution among the state banks, excited much indignation among Jackson's political opponents. This led to a quarrel with Congress which lasted throughout his term of office.

XVIII.

Our government has been tried in peace, and it has been tried in war, and has proved itself fit for both. It has been assailed from without, and it has successfully resisted the shock; it has been disturbed within, and it has effectually quieted the disturbance. It can stand trial, it can stand assail, it can stand adversity, it can stand everything but the marring of its own beauty and the weakening of its own strength. It can stand everything but the effects of our own rashness and our own folly. It can stand everything but disorganization, disunion, and nullification.—*Daniel Webster.*

XIX.

From Jackson's last administration to the Civil War was a period of industrial progress and westward expansion. The invention of the steam engine and many other labor-saving machines gave a wonderful impulse to new enterprises and accelerated the growth of cities. The enormous territory acquired at the close of the war with Mexico stimulated western immigration and extended our boundaries to the shores of the Pacific. Our promise of future greatness was only shadowed by the dark cloud

of slavery and the bitter feeling which its existence occasioned between the North and the South.

XX.

Measure slavery by the Golden Rule, and where is it? It stands in the way of that automatic instinct of progress which is eternal in the human race and irresistible in human history.—*Theodore Parker.*

Every benefit which slavery conferred upon those subject to it, all the ameliorating and humanizing tendencies it introduced into the life of the African, all the elevating agencies which lifted him higher in the scale of rational moral being, were the elements of the future and inevitable destruction of the system.—*L. Q. C. Lamar.*

XXI.

Abraham Lincoln was inaugurated President of the United States, March 4, 1861, and was assassinated in April, 1865. He was a conspicuous example of a man rising from obscurity to the loftiest altitudes of human grandeur and honor. In the perspective of history his memory is destined to shine with increasing effulgence. The nations of the earth have written the name of Lincoln among the immortal heroes of modern times. The Union free, prosperous and great, is his true and appropriate monument.

XXII.

Human glory is often as fickle as the winds and transient as a summer day; but Abraham Lincoln's place in history is assured. All the symbols of this world's admiration are his. He is embalmed in song, recorded

in history, eulogized in panegyrics, cast in marble, painted on canvas, enshrined in the hearts of his countrymen, and lives in the memories of mankind. Some men are brilliant in their times, but their words and deeds are of little worth to history; but his mission was as large as his country, vast as humanity, enduring as time.—*John P. Newman.*

XXIII.

The era of reconstruction called for the solution of many new problems in government. Congress passed, in 1865, a thirteenth amendment to the Constitution, abolishing slavery. The Southern States ratified this amendment, repealed the ordinances of secession, and repudiated the Confederate war debt. A Civil Rights bill was passed, which guaranteed rights of citizenship to negroes. In 1867 the territory of Alaska was purchased from Russia for \$7,200,000. During the administration of Gen. Grant a treaty was arranged between Great Britain and the United States, whereby the Alabama claims were submitted to a board of arbitration.

XXIV.

In 1870, the fifteenth amendment to the Constitution was adopted. This provided that "the right of the citizens of the United States to vote shall not be denied or abridged by the United States, or any state, on account of race, color, or previous condition of servitude." The administration of President Hayes was signalized by several important events: First, the withdrawal of federal troops from the South; second, the passage of the

Bland Silver Bill; and third, the resumption of specie payments. Civil service reform first received serious attention during the administration of President Arthur.

XXV.

The noble Nation is before my soul's vision. Grand in stature, comely in every feature, buoyant in the freshness of morning youth, matronly in prudent stepping, the ethereal breezes of liberty waving with loving touch her tresses, she is, no one seeing her doubts, the queen, the conqueror, the mistress, the teacher of the coming ages. To her keeping the Creator has intrusted a great continent, whose shores two oceans lave, rich in all nature's gifts; embosoming useful and precious minerals, fertile in soil, salubrious in air, beauteous in vesture.—*Bishop Ireland.*

XXVI.

There is no organization of life, individual and simple, or associated and complex, in which the instinct, impulse, or idea of self-preservation, is not the predominant one. We fought the war of the Revolution to establish our nationality, and the war of the Rebellion to maintain it. We have spent, first and last, incalculable blood and treasure to establish and keep our national life intact, and the national policy, with relation to public schools, is part and parcel of that all-subordinating determination to secure the perpetuity of the state. Men make better citizens for being educated. The higher the popular intellect is raised, the more intelligent and independent will be its vote.—*Holland.*

XXVII.

One of the greatest reforms in our government, made in recent years, has been in the method of filling appointments to office. Ever since the presidency of Jackson, political offices have been the prizes of party service. Every new president, upon his accession to office, has been beset by hordes of hungry place-seekers. Senators and representatives insisted upon their right to distribute salaried positions without regard to qualifications or efficiency. The abuses under this system were of such magnitude that an enlightened public conscience expressed its abhorrence. Civil service reform has made such progress in both national and state governments that the change amounts almost to a revolution.

XXVIII.

The expenses of government are met by taxation. The citizen of any town or city usually receives one bill annually from the tax assessors for his share of the expenses of the town, county and state governments. These taxes are computed at a given rate per cent. upon property, real and personal. The national government is supported by indirect taxation, that is, by a tariff on imported goods and a tax on various home products, which is known as internal revenue. Public sentiment has greatly changed its opinion concerning the question, What are the legitimate purposes of taxation? Education and the requirements of public health and convenience make increasing demands upon the public treasury.

XXIX.

“Taxes, no matter how collected, are ultimately paid by the producers of the country, the men who, by manual

or mental labor, create commodities. By far the largest proportion of taxes are, therefore, paid by manual labor, crude and skilled. The cost of maintaining the federal, state and municipal governments, and the payment of indebtedness, principal and interest, are the sum of taxes laid. The cost is enhanced by lack of intelligence on the part of officials and of legislators employing many to do the work of a few, and by ill-advised economy.

“After a period of fraud, recklessness, neglect, and extravagance, we go through a period of injudicious parsimony equally subversive of the public interests.”

XXX.

The manufacturing industries of the country are now carried on under a system in which large numbers of workmen are grouped under one management. Under this system there is a great gain of economy and efficiency; the subdivision of labor, the multiplication of machinery, greatly cheapen production.

The man who has the organizing ability to bring a thousand workmen together, and keep them steadily employed, cheaply and skilfully to produce the materials for their labor, is entitled to a large reward for this difficult service.
—*Gladden.*

XXXI.

The greatest opportunities of this generation, the opportunities of Christian leadership, of Christian statesmanship, are offered to the employers of labor. They are called to moralize the industrial realm, whose ruling law has hitherto been pagan. They are called to lead in that peaceful reconstruction of our industries, by which labor and capital

shall be identified in interest and feeling, and peace shall be established among men.—*Gladden.*

XXXII.

“Manual labor is an honorable calling. Modern writers in the interest of labor have asserted this in various forms, and on all occasions. Capitalists, merchants, and the professions have universally accepted the proposition as true, and in this country, at least, their attitude towards labor is one of regard and good feeling. The true laborer is proud of his vocation, proud of his name, proud of the work he does.”

XXXIII.

“Wealth serves as a passport to society. A rich man is believed to possess merits that have made him rich, or if his wealth is inherited, a certain breeding and education, which make him an acceptable associate. The majority of rich men fully answer this description; they are well-informed, shrewd, just, and polite, prompt in fulfilling their engagements, and generous in their dealings. Those who form the exception to this rule drop out of society very soon, are doomed to an inevitable isolation, and live and trade under a surveillance of universal suspicion.”

XXXIV.

Nerves are fine threads which pervade all parts of the body. Some carry sensations from without, others convey orders of motion from within. The former are called sensory nerves; the latter, motor nerves. The spinal cord, consisting of white and gray matter, lies within the spinal canal. Between every two vertebræ, nerves shoot forth to allotted parts of the body. The cerebrum occupies nine-

tenths of the cavity of the skull. The cerebellum is known as "little brain." In the brain intelligence resides, sensations are perceived, ideas are formed, and the will originates.

XXXV.

Although the special senses are said to be modifications of the sense of touch, the approximate information gained through touch and taste must result from contact with objects, while smell, hearing and sight can detect objects at a distance. The seat of the sense of smell resides in the mucous membrane lining the cavities of the nose. This sense is acute among savages, but the dog far surpasses man. For recognition of his master he depends on smell more than sight.

XXXVI.

Certain impressions are produced by means of vibrations, and are transmitted to the brain by a special apparatus called the ear.

Consider the extraordinary delicacy of the eye as an organ of sense. Here is a stimulus of unknown origin, which traverses the widest regions of space, and enables us to appreciate the existence of form, and even structure, of bodies billions of miles away, and gives us more knowledge of the external world, perhaps, than all the other senses together; and yet, its real nature is as hidden and mysterious and impalpable as the nature of our consciousness.—*Roger S. Tracy.*

XXXVII.

Lodestone is a particular kind of iron ore, or a natural magnet, possessing the power of attracting iron. A bar

of steel rubbed against lodestone will manifest magnetic properties. Experimenting with sprinklings of iron filings verifies the statement—attraction is greatest at the ends, or poles, and diminishes towards the central, or neutral line. The compass, so essential to mariners, is merely a magnetic needle placed on a pivot. When at rest, the needle points towards the earth's north and south magnetic poles.

XXXVIII.

Bodies can be electrified by friction, by contact, or by induction. Certain substances are conductors of electricity; others, non-conductors or insulators. Bodies charged with opposite kinds attract; those charged with the same kind repel. Batteries give both negative and positive electricity. By uniting the wires of opposite poles an electric current is obtained. Electricity tends to concentrate and discharge at the pointed end of a good conductor. When sparks pass between two points of carbon a light is produced. The telegraph and telephone are results of the application of electricity. A lifetime would be required to study half its marvels.

XXXIX.

It would be unjust to deny that Charles I had some of the qualities of a good, and even of a great, prince. He wrote and spoke, not like his father with the exactness of a professor, but after the fashion of intelligent and well-educated gentlemen. His taste in literature and art was excellent, his manner dignified though not gracious, his domestic life without blemish. Faithlessness was the chief cause of his disasters and is the chief stain on his

memory. He was, in truth, impelled by an incurable propensity to dark and crooked ways. It may seem strange that his conscience which, on occasions of little moment, was sufficiently sensitive, should never have reproached him with his great vice.—*Macaulay*.

XL.

The stubborn courage characteristic of the English people was, by the system of Cromwell, at once regulated and stimulated. Other leaders have maintained order as strict. Other leaders have inspired their followers with a zeal as ardent. But in his camp alone the most rigid discipline was found in company with the fiercest enthusiasm. His troops moved to victory with the precision of machines, while burning with the wildest fanaticism of crusaders. From the time when the army was remodelled, to the time when it was disbanded, it never found, either in the British Islands or on the Continent, an enemy who could stand its onset.—*Macaulay*.

XLI.

The history of Monmouth would alone suffice to refute the imputation of inconstancy which is so frequently thrown on the common people. The common people are sometimes inconstant, for they are human beings. But that they are inconstant as compared with the educated classes, with aristocracies, or with princes, may be confidently denied. It would be easy to name demagogues whose popularity has remained undiminished while sovereigns and parliaments have withdrawn their confidence from a long succession of statesmen.—*Macaulay*.

XLII.

The Puritans were men who derived a peculiar character from the daily contemplation of superior beings and eternal interests. Not content with acknowledging in general terms an overpowering Providence, they habitually ascribed every event to the will of God, for whose power nothing was too vast, for whose inspection nothing was too minute. To know Him, to serve Him, to enjoy Him, was with them the great end of existence. They rejected with contempt the ceremonious homage which other sects substituted for the pure worship of the soul. They aspired to gaze upon the intolerable brightness of the Deity, and to commune with Him face to face. Hence their contempt for worldly distinction.—*Macaulay.*

XLIII.

What reflecting American does not acknowledge the incalculable advantages derived in this land, out of the deep foundations of civil, moral, and intellectual truth from which we have drawn in England? What American does not feel proud that his fathers were the countrymen of Bacon, of Newton, and of Locke? Who does not know that every pulse of civil liberty in the heart of our ancestors, the sobriety, the firmness, and the dignity with which the cause of free principles came into existence here, constantly found encouragement from the friends of Liberty there? For myself, I can truly say that, after my native land, I feel a strong reverence for that of my fathers.—*Edward Everett.*

XLIV.

Wherever literature consoles sorrow or assuages pain; wherever it brings gladness to eyes which fail with wake-

fulness and tears, and ache for the dark house and the long sleep—there is exhibited in its noblest form the immortal influence of Athens.

In the Great Abbey, which has, during many ages, afforded a quiet resting-place to those whose minds and bodies have been shattered by the contentions of the Great Hall, the dust of the illustrious accused should have mingled with the dust of the illustrious accusers.—*Macaulay.*

XLV.

The quality of mercy is not strained,
 It droppeth as the gentle rain from heaven
 Upon the place beneath. It is twice blest :
 It blesseth him that gives and him that takes.
 It is mightiest in the mightiest ; it becomes
 The thronéd monarch better than his crown ;
 His sceptre shows the force of temporal power,
 The attribute to awe and majesty,
 Wherein does sit the dread and fear of kings.
 But mercy is above this sceptred sway ;
 It is enthroned in the hearts of kings ;
 It is an attribute to God Himself.

—*Shakespeare.*

XLVI.

Books are our most steadfast friends ; they are our resource in loneliness ; they go with us on our journeys ; they await our return ; they are our best company ; they are a refuge in pain ; they breathe peace upon our troubles ; they await age as ministers of youth and cheer ; they bring the whole world of men and things to our feet ; they put us in the centre of the world ; they summon us away from our narrow life to their greatness, from our ignorance to their wisdom, from our partial or distem-

pered vision to their calm and universal verdicts.—*T. T. Munger.*

XLVII.

Art is intended to make us contemplate the true and the infinite in forms of sense. Yet even art does not fully satisfy the deepest need of the soul. The soul wants to contemplate truth in its inmost consciousness. Religion is placed above the dominion of art.—*Schiller.*

Fashion is an odd jumble of contradictions, of sympathies and antipathies. It exists only by its being participated in by a certain number of persons, and its essence is destroyed by being communicated to a greater number. . . . Fashion constantly begins and ends in the two things it abhors most—singularity and vulgarity.—*Hazlitt.*

XLVIII.

The whole function of the artist in the world is to be a seeing and a feeling creature; to be an instrument of such tendencies and sensitiveness that no shadow, no hue, no line, no instantaneous and evanescent expression of the visible things around him, nor any of the emotions which they are capable of conveying to the spirit which has been given him, shall either be left unrecorded, or fade from the book of record.—*Ruskin.*

Freedom in a democracy is the glory of the State, and, therefore, in a democracy only will the freeman of Nature deign to dwell.—*Plato.*

XLIX.

Culture implies all which gives the mind possession of its own power, as languages to the critic, telescope to the astronomer. Culture alters the political status of an individual. It raises a rival royalty in a monarchy. 'Tis

king against king. It is ever the romance of history in all dynasties—the copresence of the revolutionary force in intellect. It creates a personal independence which the monarch cannot look down, and to which he must often succumb.—*Ralph Waldo Emerson.*

Culture, merely for culture's sake, can never be anything but a sapless root, capable of producing at best a shrivelled branch.—*Y. W. Cross.*

L.

Every faculty of the mind, like every organ of the body, must have its appropriate culture. The cultivation of the memory and the reasoning powers can not take the place or supersede the necessity of cultivating the taste and the imagination. The exercise of the hands and feet is no substitute for the training of the voice. Still less can the discipline of the mind supersede the training of the body, and of itself secure bodily health, beauty of person, or grace in action. Good writing, like everything else in our world, has a body as well as a soul; and the body as well as the soul must have its specific care and culture.—*Tyler.*

LI.

The awakening of our best sympathies, the cultivation of our best and purest tastes, strengthening the desire to be useful and good, and directing youthful ambition to unselfish ends—such are the objects of true education.—*T. Headley.*

An earthly immortality belongs to a great and good character. History embalms it; it lives in its moral influence, in its authority, in its example, in the memory of the words and deeds in which it was manifested; and as

every age adds to the illustrations of its efficacy, it may chance to be the best understood by a remote posterity.—*Edward Everett.*

LII.

The skin forms two layers, the derma, or true skin, and its protecting covering, or epidermis, which is continually destroyed and reproduced. The derma is a dense membrane, containing nerves, blood-vessels, oil-glands, lymphatic glands and perspiratory glands. Each performs its appointed function, to secrete, absorb, or excrete. The constant accumulation of the worn out parts of the epidermis necessitates bathing. Many skin diseases are caused by insufficient attention to cleanliness.

LIII.

A partial vocabulary relating to disease may be named in two paragraphs:—

Medicine, diphtheria, rheumatism, remedy, ague, cough, bilious, croup, cancer, fever, catarrh, typhoid, cholera, consumption, measles, symptom, asthma, malaria, scrofula, bronchitis, pleurisy, phthisic, neuralgia, dyspepsia and pneumonia.

Anatomy, hygiene, periosteum, cartilage, ligaments, muscles, fractures, exhaustion, beverages, appetite, effervescent, condiments, irritant, corpuscles, coagulation, trachea, glottis, diaphragm, asphyxia, resuscitation and inflammation.

LIV.

A broad field of botanical study is embodied in the following topics: Absorption, conduction, transpiration, assimilation, translocation, respiration and reproduction.

The ovules are fertilized by the pollen. The pollen reaches the ovule, and sets up the peculiar growth upon its moist and permeable tissue, which results in the production of an embryo.

Dandelion, hepatica, arbutus, orchis, anemone, balsam, gentian, peony, fuchsia, dahlia, daffodil, heliotrope, wistaria, hyacinth, alyssum, verbena, magnolia, golden-rod, mignonette and chrysanthemum are common names of flowers.

LV.

Geology, since the earliest periods, has appealed to different sides of human character. Man bows in reverence to worship mysterious nature or explore the rocks in quest of mineral treasures. The orthography and etymology of the language of rocks lie in the province of mineralogy, and the syntax and prosody belong to the realm of geology. In a language of which the letters are minerals, and the words are rock-types, is written for us the whole story of terrestrial evolution, through

“The fairy tales of science
And the long results of time.”

LVI.

“Except for a very thin covering of vegetable soil, which is a kind of epidermis, the crust of the earth is composed of materials to which the name rock is applied, even when, like sand and clay, they are of little coherency. All of these masses have been formed successively, during periods of extremely long duration, and in the midst of conditions of which they bear in themselves the characteristic marks. They are veritable monuments, which delineate in their essential traits the successive revolutions of our globe.”

LVII.

The rocks constituting the greater part of the continents are called stratified, because they are divided into large parallel layers, to which is given the name strata or beds. Rocks of this category, whatever their composition, have been formed in the seas and lakes by sediments and organisms. A sure proof of this truth is furnished by the pebbles and sands, and the innumerable remains of fossilized marine animals are a still more eloquent testimony to it. Having risen from very deep regions, they are designated as eruptive rocks.—*G. A. Daubrie.*

LVIII.

The existence of boulders, miles removed from their parent rocks, can only be explained by the transporting agency of glaciers, which in former ages moved in rivers of ice down the mountain sides, floated their melting icebergs, and deposited their loads of rocky debris in valleys which were then bottoms of unknown seas. Nothing in nature is more grand than the vast glacier in its slow but constant movement. Many of the rocks seen upon our hillsides are results of ancient glacial drift.

LIX.

The breathing of the earth affords a wide field for scientific activity and gives rise to fanciful theories as to its cause. Statistics of earthquakes tend to corroborate the scientific suggestion that the primary cause resides in the upper layers of the earth's crust, and the motive power is, directly or indirectly, the internal heat of the earth. The earth is shaken by tremors so incessant that there is never a moment of perfect rest, and so minute as to remain unsuspected without the intervention of the most delicate instruments.—*G. H. Darwin.*

REVIEW LESSONS.

LX.	LXI.	LXII.	LXIII.
mu'tu al ly	es'sence	cor rupt'	bul'wark
car bon'ic	ap pre'ci a ble	com mu'ni cat ing	cham'pi on
ab'so lute ly	se ver'i ty	en'er vate	com'pro mise
pre serve'	trop'i cal	neigh'bers	pro hib'it ed
health'ful ness	gov ern men'tal	fi nan'cial	sec'tion al
har'mo ny	com mu'ni ties	prop o si'tion	dis cus'sion
spe'cies	vig'or ous	sa ga'cious	doc'trine
ge o graph'i cal	man i fes ta'tions	cap'i tal ists	nul li fi ca'tion
en vi'ron ment	e las tic'i ty	cred'i tors	re char'ter
li'a ble	func'tions	rev'e nue	op po'nents
mod i fi ca'tion	par'a ly zing	tar'iff	ad ver'si ty
val'u a ble	de bil'i tat ing	in ci den'tal	en'ter prise
spon ta'ne ous ly	fac'ul ties	fed'er al	stim'u lat ed
sig nif'i cant	sus cep'ti ble	in au'gu rat ed	em i gra'tion
char'ac ter ize	sa lu'bri ty	pres'i den cy	bound'a ries
pe cul'iar ly	sub stan'tial	dec'i mal	au to mat'ic
a dap ta bil'i ty	dis tri bu'tion	cur'ren cy	ir re sist'i ble
cush'ioned	ac'ci dent	u ni ver'si ty	a mel'io rat ing
ca pac'i ty	cli mat'ic	daz'zling	hu'man i zing
jour'ney ing	ad ja'cent	in vi'o la ble	ra'tion al
lla'ma	op'er at ed	un tir'ing	in ev'i ta ble
sym'bol ize	nav i ga'tion	vig'i lance	as sas'si nat ed
im mu'ta ble	in ven'tion	en croach'ment	con spic'u ous
rev e la'tion	tel'e graph	sub or'di nate	ob scu'ri ty
mys'ter y	her'bage	a nal'o gy	at'ti tudes

LXIV.	LXV.	LXVI.	LXVII.
per spec'tive	e the're al	in ju di'cious	bat'ter ies
des'tined	as so'ci a ted	par'si mo ny	neg'a tive
tran'sient	pres er va'tion	sub di vi'sion	pos'i tive
ad mi ra'tion	pre dom'i nant	mul ti pli ca'tion	phys i o log'ic al
eu'lo gized	re bel'lion	mor'al ize	con cen'trate
pan e gyr'ic	in cal'cu la ble	i den'ti fied	light'ning
en shrined'	sal'a ried	hon'or a ble	lit'er a ture
re con struc'tion	qual i fi ca'tions	vo ca'tion	gra'cious
so lu'tion	ef fi'cien cy	in her'it ed	do mes'tic
a mend'ment	mag'ni tude	ac cept'a ble	blem'ish
a bol'ish ing	con'science	shrewd	dis as'ters
rat'i fied	ab hor'rence	i so la'tion	in cur'a ble
or'di nan ces	an'nu al ly	sur veil'lance	pro pen'si ty
se ces'sion	as sess'ors	sus pi'cion	en thu'si asm
re pu'di a ted	sen'ti ment	sen'so ry	fa nat'i cism
guar'an teed'	le git'i mate	spi'nal	cru sad'ers
ar bi tra'tion	ul'ti mate ly	ver'te bræ	suf fice'
a bridged'	man'u al	cer'e brum	re fute'
pre'vi ous	com mod'i ties	cer e bel'lum	im pu ta'tion
serv'i tude	mu nic'i pal	ap prox'i mate	in con'stan cy
sig'nal ize	in debt'ed ness	mu'cous	ar is toc'ra cies
re sump'tion	en hanced'	mem'brane	dem'a gogues
come'ly	e con'o my	vi bra'tions	par'lia ments
buoy'ant	ex trav'a gance	ap pa ra'tus	con tem pla'tions
ma'tron ly	sub ver'sive	im pal'pa ble	ha bit'u al ly

LXVIII.

LXIX

LXX.

LXXI.

cer e mo'ni ous	an tip'a thies	oil'-glands	phthi'sic
hom'age	jum'ble	lym phat'ic	neu ral'gi a
in tol'er a ble	par tic'i pa ted	per spir'a to ry	dys pep'si a
com mune'	com mu'ni cat ed	se crete'	pneu mo'ni a
foun da'tions	sin gu lar'i ty	ac cu mu la'tion	a nat'o my
an'ces tors	vul gar'i ty	vo cab'u la ry	hy'gi ene
so bri'e ty	in'stru ment	par'a graph	per i os'te um
as suag'es	in stan ta'ne ous	med'i cine	car'ti lage
rec on cil i a'tion	ev a nes'cent	diph the'ri a	lig'a ments
en'mi ties	de moc'ra cy	rheu'ma tism	frac'tures
gen er a'tions	deign	rem'e dy	ex haus'tion
con ten'tion	tel'e scope	a'gue	bev'er ag es
scep'tre	as tron'o mer	bil'ious	ap'pe tite
tem'po ral	dy'nas ties	ca tarrh'	ef fer ves'cent
stead'fast	ro mance'	can'cer	con'di ments
re source'	suc cumb'	ty'phoid	ir'ri tant
lone'li ness	shriv'elled	chol'er a	cor'pus cles
ig'no rance	ap pro'pri ate	con sump'tion	co ag u la'tion
dis tem'pered	su per sede'	mea'sles	tra'che a
u ni ver'sal	in au gu ra'tion	symp'toms	glot'tis
ver'dict	man'i fest ed	asth'ma	di'a phragm
in'fi nite	ef'fi ca cy	ma la'ri a	as phyx'i a
do min'ion	pos ter'i ty	scrof'u la	re sus ci ta'tion
con tra dic'tion	der'ma	bron chi'tis	in flam ma'tion
sym'pa thies	ep i der'mis	pleu'ri sy	bo tan'ic al

LXXII.

trans pi ra'tion
 as sim i la'tion
 trans lo ca'tion
 res pi ra'tion
 pre sum'a ble
 em'bry o
 re frac'tion
 ar'bu tus
 or'chis
 a nem'o ne
 gen'tian
 bal'sam
 pe'o ny
 fuch'si a
 dah'lia
 daf'fo dil
 he'li o trope
 wis ta'ri a
 hy'a cinth
 a lys'sum
 ver be'na
 mag no' li a
 mi gnon ette'
 chrys an'the mum
 sta tis'tics

LXXIII.

ge ol'o gy
 or thog'ra phy
 et y mol'o gy
 min er al'o gy
 syn'tax
 pros'o dy
 ter res'tri al
 ev o lu'tion
 ver'i ta ble
 de lin'e ate
 strat'i fied
 cat'e go ry
 sed'i ments
 fos'sil ize
 el'o quent
 des'ig nat ed
 boul'ders
 gla'ciers
 de bris'
 ice'berg
 in im'i cal
 in sur'gent
 in ter ven'tion
 in ces'sant
 cor rob'o rate

LXXIV.

sas'sa fras
 pen'u ry
 con ta'gion
 ep i dem'ic
 an tag'o nist
 pau'per ism
 sus cep ti bil'i ty
 vi cis'si tude
 pha'e ton
 rep'ri mand
 en cy clo pæ'di a
 pen'du lum
 ad mon'ish
 au then tic'i ty
 co a li'tion
 in nu en'do
 in sin'u ate
 rasp'ber ry
 cha'os
 as par'a gus
 ca tas'tro phe
 hon'ey suc kle
 rec on noi'ter
 rhu'barb
 sub serv'i ence

LXXV.

e qui lib'ri um
 ob tain'a ble
 mer cu'ri al
 or'i fice
 e nu'mer ate
 ob'sti na cy
 syl'la bus
 mo nop'o ly
 het e roge'ne ous
 ep'i lep sy
 E pis'co pal
 em'is sa ry
 ste re op'ti con
 gram mat'ic al
 pla'gia rism
 pur vey'ance
 pu'tre fy
 re cur'rent
 re ju've nate
 re sid'u al
 re tal'i ate
 U ni ta'ri an
 sed'u lous
 sed'en ta ry
 si mil'i tude

SELECTED WORDS.

To be written in sentences by the pupil.

LXXVI.	LXXVII.	LXXVIII.	LXXIX.
ag gres'sion	quar'rel	ker o sene'	de fraud'
es'cort	ju've nile	de cid'u ous	sem'i na ry
re ga'li a	ro tun'da	per en'ni al	pur'ga to ry
en liv'en ing	for'mi da ble	ex ot'ic	ben e fac'tor
con verse'	ves'ti bule	dis cre'tion	ar bi tra'tion
mov'a ble	cem'e ter y	trus tee'	ca price'
in'va lid	ped'es tal	trans gres'sion	pre lim'i na ry
no'tice a ble	be guile'	su per in tend'ent	a tro'cious
gal'lant	min'a ret	li bra'ri an	fau'cet
an'gri ly	def'i cit	ab do'men	pro pri'e tor
man'age a ble	bal'us trade	cen'sus	com'bat ant
al lay'ing	ur'gen cy	mis'sive	per'se cute
an noy'ance	un re lent'ing	ac cli'mate	ob'sta cle
fi del'i ty	sol'i ta ry	fan tas'tic	et'i quette
as ser'tion	rid'i cule	te leg'ra phy	ap plaud'
shrub'ber y	con fu'sion	a droit'	loz'enge
eq'ui page	tap i o'ca	pho tog'ra pher	a gil'i ty
con'struc	ex cur'sion	au'di ble	pin'na cle
le'ni ent	in cis'ion	de cep'tion	hur'ri cane
mer'can tile	sal e ra'tus	de'cen cy	tab'er na cle
hy poc'ri sy	hom'i ny	pen'i tent	an gel'ic
ma gi'cian	choc'o late	sen'si tive	the at'ric al
cov'et ous	pre cis'ion	per vade'	em balm'
chis'eled	con vul'sion	liv'er y	sur'gi cal
gos'sip	sun'dries	drudg'er y	fas'ci nate

LXXX.	LXXXI.	LXXXII.	LXXXIII.
skep'tic al	sac'ra ment	pa ter'nal	syn op'sis
res'tau rant	car'ni val	mag a zine'	an te ce'dent
crin'o line	de fi'cien cy	pol'y gon	ac qui esce'
spec'tre	punc tu al'i ty	ho mœ op'a thy	a nal'y sis
lin'guist	req'ui site	ath'lete	glyc'er in
nymph	a pos'tle	graph'ic	id'i om
ru'di ments	ve loc'i ty	vin dic'tive	in ter rog'a tive
phan'tom	i dol'a try	hem'or rhage	am a teur'
o'gre	com mem'o rate	zo ðl'o gy	sat'el lite
hos til'i ty	for'fei ture	no ti fi ca'tion	cat'er pil lar
vol un teer'	ra'di ant	ex pe'di ent	o ri en'tal
hu mil'i ty	prev'a lence	tech'nic al	pes'ti lence
fri vol'i ty	proc la ma'tion	bi og'ra phy	suf'fo cate
ar ti fi'cial	main'te nance	aq'ue ducts	an te di lu'vi an
au'di tor	ex or'bi tant	mas quer ade'	di lem'ma
hid'e ous	en er get'ic	re lin'quish	con tral'to
no'ta ry	con'so nant	so lil'o quy	de pre'ci ate
pa'thos	sig'na ture	ver'sion	an'te date
mi'cro scope	cou'pon	ab o rig'i nes	ma raud'er
fil'ial	chas'tise ment	an tag'o nist	ef fer vesce'
ba rom'e ter	blas'phe mous	pit'tance	col lapse'
pho'no graph	bel lig'er ent	con spir'a cy	ap pen'dix
ver'dict	am bus cade'	a pol'o gy	trans mi gra'tion
er ro'ne ous	fur'lough	pro mis'cu ous	scheme
prod'i gal	dem'on strate*	em'pha sis	sem'i co lon

* or de mon'strate

LXXXIV.	LXXXV.	LXXXVI.	LXXXVII.
tan'ta lize	fil'i gree	hy'phen	ur bane'
te'di ous	cre den'tial	vogue	vi'ti ate
pre ma ture'	fu'mi gate	ex hil'a rate	af'fa ble
col'league	sanc'tion	lit i ga'tion	lu'cra tive
a'the ist	car'i ca ture	mac a ro'ni	as trin'gent
sched'ule	fluc'tu ate	pro lif'ic	ve'he mence
an'ti dote	con do'lence	af fi da'vit	met'a phor
hy per bo're an	ca nine'	in teg'ri ty	os'cil late
syn'o nym	fal'con	cod'i cil	co a lesce'
an'arch ist	mon'as ter y	for'ti tude	ob'so lete
cat'e chism	ben'zine	ha rangue'	pa vil'ion
a nom'a ly	tac'i turn	mac a roon'	sou ve nir'
sym'pho ny	mor'phine	ver mil'ion	co logne'
an tip'a thy	nau'se a	cyl'in der	se di'tion
a non'y mous	ster'e o type	gro tesque'	tur'pen tine
res ur rec'tion	va nil'la	lus'cious	bash'ful
per ni'cious	in cen'di a ry	de lude'	par al lel'o gram
pil'grim age	pe cun'i a ry	re cip'i ent	chron'ic
re'tal'i ate	so no'rous	par'a site	vac'ci nate
co er'cion	phil an'thro py	lu'di crous	con va lesce'
a lac'ri ty	va'grant	lo qua'cious	tel'e scope
math e mat'i cal	fea'si ble	al'le go ry	chlo'ro form
fra ter'ni ty	pen i ten'tia ry	ma neu'ver	chro nom'e ter
fal'li ble	tra ge'di an	gar'ru lous	mag ne'si a
mer'ce na ry	phe nom'e non	weird	tinc'ture

ABBREVIATIONS USED IN WRITING AND PRINTING.

A. B. —Bachelor of Arts	Cor. Sec. —Corresponding Secretary
Acct. —Account	Cr. —Credit ; Creditor
A. D. —In the year of our Lord	Cts. —Cents
Ad. lib. —At pleasure	Cwt. —Hundredweight
Admr. —Administrator	D. C. —District of Columbia
Admx. —Administratrix	D. D. —Doctor of Divinity
Agt. —Agent	Dea. —Deacon
Ala. —Alabama	Del. —Delaware
A. M. —Master of Arts ; Before noon	Dept. —Department
An. —In the year	Doz. —Dozen
Anon. —Anonymous	Dr. —Debtor ; Doctor
Ans. —Answer	E. —East
Apr. —April	Ed. —Editor ; Edition
Arith. —Arithmetic	e. g. —For example
Ark. —Arkansas	Eng. —England
Aug. —August	Esq. —Esquire
Bal. —Balance	Etc. —And others ; and so forth ; and the like
B. C. —Before Christ	Ex. —Example ; Exodus
Bro. —Brother	Feb. —February
Bros. —Brothers	Flor. —Florida
Bush. —Bushel	Fri. —Friday
C. —One hundred	F. R. S. —Fellow of the Royal Society
Cal. —California	Ga. —Georgia
Cap. —Capital	G. B. —Great Britain
Capt. —Captain	Gen. —General
C. E. —Civil Engineer	Geo. —George
Chap. —Chapter	Gov. —Governor
Chas. —Charles	Hhd. —Hogshead
Co. —Company ; County	Hon. —Honorable
C. O. D. —Cash on Delivery	H. R. —House of Representatives
Col. —Colonel	Id. —The same
Coll. —College	
Conn. —Connecticut	

- i. e.**—That is
I. H. S.—Jesus the Saviour of Men
Ind.—Indiana
Ill.—Illinois
Inst.—Instant
Int.—Interest
Ia.—Iowa
I. O. U.—I owe you
It. or Ital.—Italic; Italian
Jan.—January
Jr.—Junior
Kan.—Kansas
Ken.—Kentucky
£.—Pound sterling
La.—Louisiana
L. I.—Long Island
Lib.—Librarian
Lient.—Lieutenant
LL. B.—Bachelor of Laws
LL. D.—Doctor of Laws
Long.—Longitude
Lou., La.—Louisiana
L. S.—Place of the Seal
M.—Marquis; Monsieur; Thousand; Meridian; Noon
M. A.—Master of Arts
Maj.—Major
Mar.—March
Mass.—Massachusetts
M. C.—Member of Congress
M. D.—Doctor of Medicine
Md.—Maryland
Me.—Maine
Messrs.—Gentlemen; Sirs
Mich.—Michigan
Minn.—Minnesota
Miss.—Mississippi
Mme.—Madame
Mo.—Missouri
Mon.—Monday; Montana
M. P.—Member of Parliament
Mr.—Master or Mister
Mrs.—Mistress or Misses
Mt.—Mount or Mountain
N.—North
N. A.—North America
N. B.—Take Notice
N. C.—North Carolina
N. D.—North Dakota
N. E.—North East; New England
Neb.—Nebraska
N. H.—New Hampshire
N. J.—New Jersey
No.—Number
Nov.—November
N. S.—Nova Scotia; New Style
N. Y.—New York
O.—Ohio
Oct.—October
Or.—Oregon
O. S.—Old Style
Penn.—Pennsylvania
Per annum.—By the year
Per cent.—By the hundred
pp.—Pages
Ph. D.—Doctor of Philosophy
Phila.—Philadelphia
P. M.—Post-master; Afternoon
P. O.—Post-office
Pres.—President
Prof.—Professor
Pro tem.—For the time being
Prox.—Of the next month
P. S.—Postscript
Rec. Sec.—Recording Secretary
Rev.—Reverend
R. I.—Rhode Island
R. R.—Railroad

S. —South	U. S. —United States
S. A. —South America	U. S. A. —United States of America ; United States Army
Sat. —Saturday	Va. —Virginia
S. C. —South Carolina	Viz. —Namely ; to wit
S. D. —South Dakota	Vol. —Volume
Sec. —Secretary	Vs. —Against ; In opposition
Sept. —September	Vt. —Vermont
Sq. —Square	W. —West ; Welsh
S. T. D. —Doctor of Divinity	Wash. —Washington
Sun. —Sunday	Wed. —Wednesday
Supt. —Superintendent	W. I. —West Indies
Tenn. —Tennessee	Wis. —Wisconsin
Tex. —Texas	W. Va. —West Virginia
Thurs. —Thursday	Yds. —Yards
Univ. —University	

LATIN WORDS AND PHRASES.

Ab initio —From the beginning	De novo —Anew
Ad infinitum —To infinity	Deo volente —God willing
Ad interim —In the meanwhile	De profundis —Out of the depth
Ad libitum —At pleasure	Disjecta membra —Scattered remains
Ad valorem —According to value	Ecce homo —Behold the man
Alias —Otherwise	E pluribus unum —One out of many
Alibi —Elsewhere	Erratum —An error
Amor patriæ —Love of one's country	Exeunt —They go out
Anno Domini —In the year of our Lord	Ex officio —By virtue of his office
Ante bellum —Before the war	Ex parte —On one side only
Ante meridiem —Before noon	Extempore —Without premeditation
A priori —From cause to effect	Fac simile —A close imitation
Bona fide —In good faith	Festina lente —Hasten slowly
De facto —From the fact	Fortiter in re —Firm in action
Dei gratia —By the grace of God	

Gloria in excelsis —Glory to God in the highest	Mutatis mutandis —The necessary changes being made
Id est —That is	Nolens volens —Willing or not
In extenso —At length; in full	Nolle prosequi —Unwilling to proceed
In extremis —At the point of death	Non sequitur —It does not follow
Incognito —Unknown	Nota bene —Mark well
In loco parentis —In the place of a parent	Per annum —By the year
In memoriam —In memory	Per capita —By the head
In statu quo —In the former state	Per centum —By the hundred
Interim —In the meanwhile	Per diem —By the day
In transitu —On the passage	Per se —By itself
Inter nos —Between ourselves	Post mortem —After death
Ipse dixit —He himself said it	Pro bono publico —For the public good
Lapsus linguæ —Slip of the tongue	Pro rata —In proportion
Laus Deo —Praise to God	Quid pro quo —An equivalent
Memoriter —By rote	Sine die —Without day
Mens sana in corpore sano —A sound mind in a sound body	Sine qua non —An indispensable condition
Mirabile dictu —Wonderful to be told	Ultimatum —The last condition
Modus operandi —Manner of operation	Verbatim et literatim —Word for word and letter for letter
Multum in parvo —Much in little	Via —By the way
	Vice versa —The terms being exchanged
	Viva voce —By the living voice

FRENCH WORDS AND PHRASES.

A la mode —In the fashion	Au revoir —Farewell till we meet again
A propos —To the point	Billet doux —A love letter
Au contraire —On the contrary	Bizarre —Odd; fantastic
Au fait —Skilful; expert	Blase —Surfeited
Au fond —To the bottom	

- Bonhomie**—Good-natured simplicity
Bon jour—Good-day
Bon mot—A witticism
Bonne foi—Good faith
Carte blanche—Full power
Chef-d'œuvre—A master-piece
Comme il faut—As it should be
Contretemps—An awkward mishap
Coup d'état—A stroke of policy
Coup d'œil—A glance
Coûte qu'il coûte—Let it cost what it may
Cuisine—A kitchen
Début—First appearance
Eclat—Splendor
Elite—A selected body of persons
Encore—Again
En masse—In a body
En route—On the way
Ensemble—The whole
Entre nous—Between ourselves
Espirit de corps—The animating spirit of a collective body
Faux pas—A false step
Fête—A holiday
Garçon—A boy
Gardez bien—Take care
Gens d'armes—Armed police
Jeu d'esprit—A witticism
Littérateur—A literary man
Mauvais goût—Bad taste
Naïve—Having unaffected simplicity
Née—Born
Négligé—Undressed
Noblesse oblige—Rank imposes obligation
Nom de plume—An assumed name
On dit—They say
Pas à pas—Step by step
Passé—Worn out
Patois—Dialect of the lower classes
Protégé—One protected by another
Qui vive ?—Who goes there
Résumé—A summing up
Rôle—A part in a performance
Savant—A man of science
Tant mieux—So much the better
Tête-à-tête—Face to face ; in close conversation
Tout ensemble—The whole taken together
Valet de chambre—An attendant
Vis à vis—Facing
Vive le roi—Long live the king
Voilà—Behold ; there is

RULES FOR CAPITALS.

Begin with a capital letter:

- I.—The first word of every sentence.
- II.—The first word of every line of poetry.
- III.—The first word of every direct quotation.
- IV.—Proper nouns and words derived from proper nouns.
- V.—Names and titles of Deity.
- VI.—Names of things vividly personified.
- VII.—Names of days of the week and months of the year.
- VIII.—Names of religious bodies, political parties, or special societies.
- IX.—Titles applied to individuals or used as parts of names.
- X.—Words naming particular things, or events of special importance.
- XI.—Important words in titles of books, of newspapers, or of compositions.
- XII.—The pronoun *I*, the interjection *O*, and most abbreviations should be capitals.

RULES FOR PLURALS.

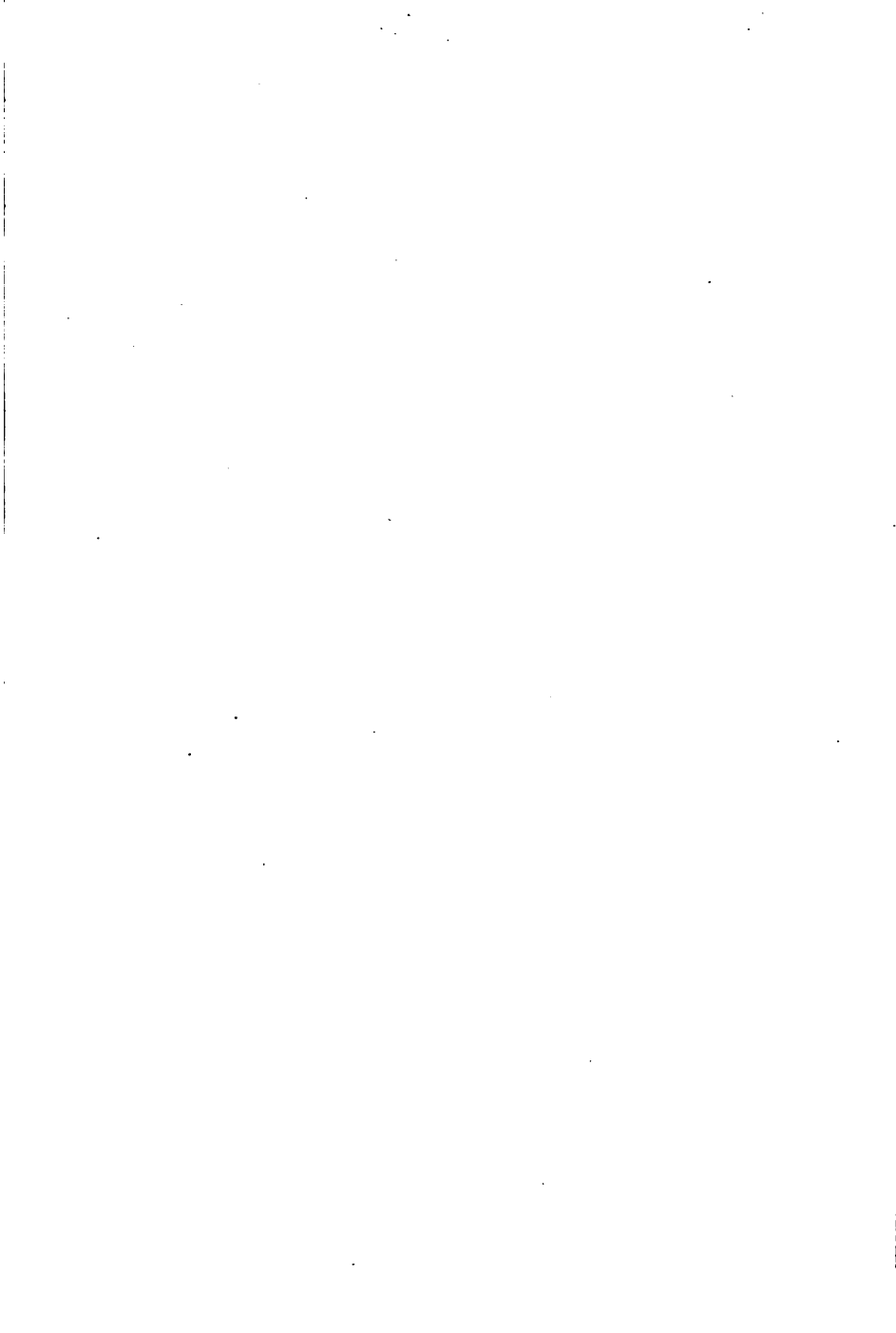
- I.—Most nouns form plurals by adding *s*.
- II.—Nouns uniting with sounds represented by *s* form plurals by adding *es*.
- III.—Nouns ending in *y* preceded by a consonant change *y* to *i* and add *es*,
- IV.—Some nouns ending in *f* or *fe*, change *f* or *fe* to *v* and add *es*.
- V.—Letters, figures, and other characters are made plural by adding apostrophe (') and *s*.

RULES FOR SUFFIXES.

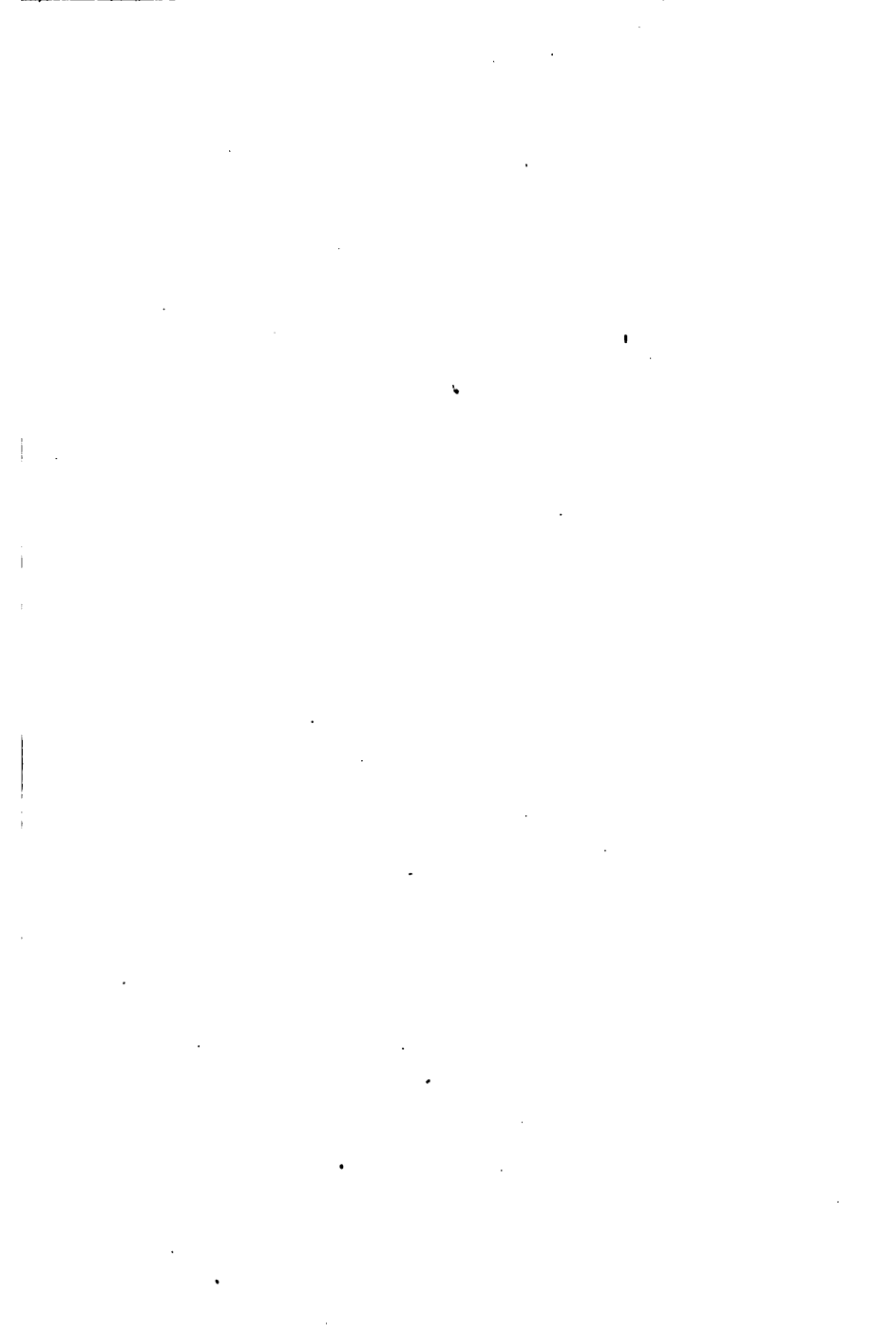
- I.—Some words ending in *e* drop the *e* before taking a suffix beginning with a vowel.
- II.—Monosyllables and words accented on last syllable, ending in a consonant preceded by a vowel, double the consonant before taking a suffix beginning with a vowel.
- III.—Final *y* preceded by a consonant is changed to *i* unless the suffix begins with *i*.

RULES FOR POSSESSIVES.

- I.—All nouns in the singular and all plurals not ending in *s* form their possessives by adding apostrophe (') and *s*.
- II.—Plurals ending in *s* add the apostrophe (') only.







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